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ABSTRACT

Two efforts were made to develop achievement motivation in school children and to observe the effect of such training on their behavior in and out of school. These studies were undertaken because: (1) Achievement motivation might help children think more seriously about their work habits and career planning; (2) It might improve the grades of potential dropouts; and (3) Attempts at direct motivation might be an educative effort in itself. The two groups sponsoring these efforts were the Harvard University and the St. Louis group at Washington University. No very convincing evidence is provided by the Harvard studies which shows that achievement motivation improves grades. Results reported by the St. Louis group include: (1) improvement in science and math performance in the year after the training, (2) larger gains for pupils coming from a high school containing a high proportion of minority groups, and (3) more effective training for teachers when it is spread over the entire year. Training effectiveness varied according to age and maturity, sex, subject matter and classroom structure. A manual detailing techniques of motivation was produced. Two questionnaires on the effects of organizational climate on motivation were also distributed. The overall conclusion is that achievement motivation training courses improve classroom and life management skills. Curriculum materials developed from this is research available from Education Ventures, Inc. (See ED 053 481 & ED 054 997). (Author/CK)

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FINAL REPORT

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ACHIEVEMENT MOTIVATION DEVELOPMENT PROJECT

David C. McClelland

Alfred S. Alschuler

Harvard University

Cambridge, Massachusetts 02138

April

1971

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
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Summary

What is the Effect of Achievement Motivation Training in the Schools?

David C. McClelland

A number of attempts have been made to develop achievement motivation in school children and to observe the effect of such training on their behavior in and out of school. What conclusions can be drawn from these studies? Previous work with adults has demonstrated that brief intensive training courses in achievement motivation for businessmen increases their entrepreneurial activity for some years after the training (McClelland and Winter, 1969). If achievement motivation can be developed in adults, why not try to develop it in children? The question seemed eminently worth trying to answer if only because teachers so often complain that many children are "unmotivated." If psychologists have invented a technique for increasing motivation, it might well be applied to school children in such a way as to make them want to work harder and learn more. Though such an argument seems simple and straightforward, it glosses over a theoretical difficulty. The achievement motivation measure (n Achievement Score) used in previous studies--based on content analysis of fantasy-- has never been shown to be consistently related to academic performance--to grades in school, or to scores on tests of academic talent. Why, then, should increasing achievement motivation improve school performance? Despite this obvious problem, the studies were undertaken because achievement motivation training might work and because it ought certainly to help children to think more seriously about their work habits and career planning, even if it does not directly affect their grades. Furthermore it might well improve grades a little for those most likely to drop out of school by helping them to see the importance of at least minimal school success for attaining longer range vocational goals. Finally, direct attempts to increase motivation in school children have been so few and far between that it seemed likely much might be learned just from making the attempt.

By now dozens of achievement motivation courses have been given for hundreds of pupils in Boston, St. Louis, and California. A full description of how they were carried out has been published by Alschuler, McIntyre and Tabor (1970). In general they involved teaching children directly how to think, talk and act like a person with high n Achievement and then to examine carefully the extent to which they wanted to plan their lives in the immediate future according to this model. Extensive materials have been published for teaching achievement motivation (by Educational Ventures, Inc., Middletown, Conn.). Many teachers have been instructed in how to use the material. Pupils who have been trained have been followed up one and two years later to see whether their in-school or out-of-school performance has changed in any way as compared to control groups of students who have not been trained in achievement motivation.

Most of these studies have been conducted under the aegis of two independent though allied groups of researchers. Beginning in 1965 the office of Education granted funds to Harvard University, to be used under the general direction of Professor McClelland to explore the effects of Achievement Motivation in the schools. In the first year of this project, Professor Richard deCharms visited Harvard University and participated fully in the early planning of the research. When he returned to Washington University in St. Louis, he started his own project, eventually received separate funding for it, and is reporting his work separately. However, his findings are very much a part of the total enterprise and many of the most important ones will therefore be summarized here. The projects at Harvard University and Washington University started out with quite similar training ideologies, and then pursued different but complementary research strategies. Mr. Manohar S. Nadkarni, who had conducted achievement motivation training courses for businessmen in India, trained those who later gave motivation courses both at Harvard and in St. Louis. The Harvard group then decided to continue the tradition of giving short intensive courses for school children to be offered by trained project staff. They followed this strategy because in the early days the main thrust of the project was in the direction of trying to find out how best to introduce achievement motivation into schools so as to maximize its impact. Thus, it was desirable to try out many different types of short courses. Furthermore, the Harvard group focussed especially on the effects of motivation training outside school, since it was considered likely on theoretical grounds that increasing achievement motivation would have slight effects on academic performance.

The St. Louis group under Professor deCharms, on the other hand, concentrated primarily on studying the effects of achievement motivation training* on school work. Partly for this reason they trained the teachers themselves to introduce achievement motivation training into the classrooms in whatever way they found most convenient. Thus, so far as most of the pupils in the St. Louis experiments were concerned, they experienced achievement motivation training inputs throughout an entire school year more or less as a part of other things that they were studying. In contrast, in the Harvard studies, the pupils were exposed to brief intensive courses given by outsiders which were separate and distinct from the rest of what was going on in class and usually concentrated into something like 20-40 hours of work spread out over 3-10 days, or at most 3-4 weeks. These contrasting strategies tended to increase the variety of information obtained about the effects of achievement motivation training on junior high and high school pupils.

The Effects on School Performance

No very convincing evidence is provided by the Harvard studies which shows that achievement motivation training improves grades or test scores. In the first study of potential dropouts from Arlington High School, the boys who stuck out residential training in a rural setting did show a slight improvement in grades (from D+ to C- on the average) but it was not large and selection was confounded with treatment. Perhaps those who stuck it out were made of sterner stuff and did better for that reason rather than because of the training. In later studies at Arlington High School grades did improve more in the 10th grade for the boys who received the complete motivation training course as contrasted with controls, but the girls did not show an improvement and even for the boys the gain had disappeared by the 11th grade. In short, the findings from these studies so far as academic performance is concerned are inconsistent, small and not impressive (Alschuler, 1971).

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*Later this developed into a form which he has labelled origin training to distinguish it from what is described in Alschuler et. al. (1970).

On the other hand, the St. Louis group has reported quite dramatically different results. Consider the findings reported by Ryals (1969), for example, as summarized briefly in Table 1.

Insert Table S.1 about here

He had arranged for achievement motivation courses to be given for 8th graders on four different weekends, either on the school grounds ("campus") or in a camp up in the mountains. He corrected test scores and grades for differences before the testing and found that while there were no effects of training on grade point average or social studies test scores, training did seem to improve science and math performance quite significantly in the year after the training. Furthermore, the gains on the average were larger for pupils coming from a high school containing a high proportion of minority groups (blacks, Chicanos) than for students coming from a middle-class, white high school. The chief difference between these brief training courses and those sponsored by the Harvard group was that the students were taught by their own teachers who had received achievement motivation training from Mr. Nadkarni.

Training by teachers from the schools concerned is even more effective when it is spread out over the entire year, as illustrated by the findings summarized in Figure 1 (from deCharms, 1970). These charts present average scores on parts of the Iowa Test of Basic Skills which is standardized by grade level so that any average class should score, for example, 7.0 at the end of the 7th grade. The children involved here are all from ghetto schools in a largely black area of the city of St. Louis. Those who did not receive achievement motivation training from their teachers in general fall more and more behind expected grade levels on various test scores as they get older. However, if they received motivation training throughout the 6th and 7th grades, they ended up with scores which are at or a little above grade norms for the test, as Figure 1 makes clear.

Table S.1

Effects of Achievement Motivation Training
on Residualized Gain Scores*
(San Mateo County, 8th and 10th Grades Combined)

		All Students					Students Attending 3 or 4 Weekends			
Training Group	N	GPA**	N	Social Studies Test	N	Science Test	N	Science Test	N	Math Grades
Campus	68	48.6	55	49.2	56	50.1	42	50.8	45	52.3
Camp	68	50.9	49	49.0	49	50.5	44	51.3	47	59.6
Control	75	51.7	49	49.3	49	46.9	49	46.9	69	47.0
Significance of Training Effect		NS		NS		$p < .05$		$p < .01$		$p < .05$

*Actual score obtained one year after training subtracted from predicted score based on pretesting plus 50. Thus, scores over 50 represent greater than predicted gains.

**Grade point average, english, social studies and math grades combined.

Insert Figure S.1 about here

Results such as these which have been reported by the deCharms project leave little doubt that achievement motivation training can have fairly dramatic effects on school performance if it is properly understood by teachers and integrated throughout the year with their regular classroom work.

Effects on Non-school Activities

As noted earlier, the Harvard group under the leadership of Dr. Alfred Alschuler, focused primarily on trying to discover whether intensive achievement motivation courses changed the way teenagers spent their time, and worked, planned, and thought about the future. Here the findings are quite consistent across different courses. Nearly all groups receiving full achievement motivation training reported 8 to 18 months later in a telephone interview that they were spending their time in more achievement related ways. For example, when the trained potential dropouts from Arlington High School were asked, "What are the most important things you do or think about?", 100% of them mentioned doing well in school or in their work as it related to a future career. In contrast, only 4 out of 15, or 27% of the controls, mentioned school or work as "most important". They spoke about the fun they were having with their girls or in various recreational activities.

Or to cite another instance, some 11-year-old boys who were trained in the summer were queried extensively about what they had been doing, in a telephone interview a year later (see Alschuler, 1971). Their answers were classified under 11 different types of activities ranging from working vs. not working, extent of travel they had undertaken to explore their surroundings, types of games played, or TV shows watched (achievement oriented or not), etc. Each boy was given a +1 if he was above the median for the group in the extent to which he displayed an achievement orientation in each of these activities. These scores were summed to get a total achievement activity index. 77% of those who received achievement training were above the median on this index as contrasted with only 11% of those who had a comparable motivation course dealing with establishing more friendly relationships with others. At the high school level for 16-year-olds, the result was similar. Significantly more of the better trained boys in Arlington High School reported that they were more involved in achievement related ways in 20 different types of activities outside of school. However, the same result was not obtained for girls. No matter how much training they had received, or of what type, they reported about the same amount of participation in achievement related activities. It may well be that achievement motivation training is more relevant to boys. They are more required normally to be work and career oriented and to take initiative toward solving such problems. Girls, on the other hand, may adopt a more

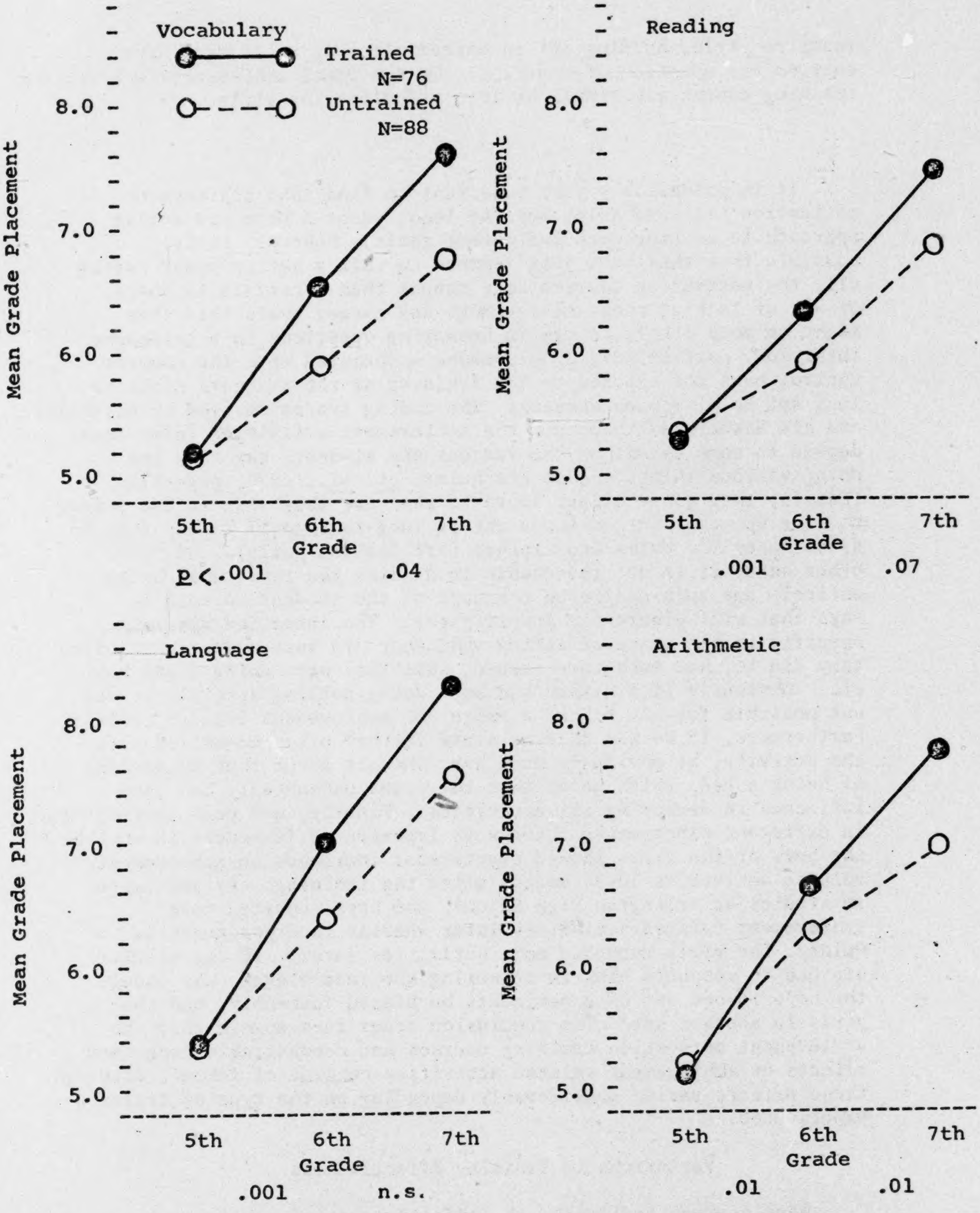

Figure S.1 Mean Grade Placement on Iowa Test of Basic Skills for students trained and untrained in achievement motivation self-contained classrooms. (from deCharms, 1970)

reactive style, holding off on career planning until they have settled the question of marriage. Or the usual achievement motivation training course may simply be less effective for girls.

It is potentially very important to find that achievement motivation training helps boys at least adopt a more pro-active approach to setting work and career goals. However, is it possible that they have just learned to talk a better game? After all, the motivation courses have taught them a certain language, or way of talking about achievement and career goals that they might be more likely to use in answering questions in a telephone interview, particularly from someone associated with the courses. Control boys not exposed to the training or the trainers might be less apt to give such answers. The coding system devised by Alschuler and his associates to obtain the achievement activities index does depend to some extent on the reasons why students say they are doing various things. (See Alschuler, et. al., 1970, page 173.) That is, they get a higher score if they say they work in the summer to save up money for buying a car (a long-term goal) rather than to spend money for dates and clothes (affiliation goals). On the other hand, it is not reasonable to dismiss the results as being entirely due to a desire on the part of the student to talk in ways that will please the investigator. The interview was very specific in the sense of asking what they did last summer, how often they did it, how much they earned, what they were doing right now, etc. Obviously if a person had been doing nothing special, it was not possible for him to get a score for achievement related activity. Furthermore, if he was able to state further plans connected with the activity, he obviously must have thought about them in advance of being asked, which means that the plans undoubtedly had some influence in directing his activities. Finally, and most convincingly, in different experiments there were important differences in whether the boys or the girls showed significant increases in achievement related activities 10-20 months after the training. By and large in studies at Arlington High School, the boys reported more achievement related activities later whereas in experiments in Quincy, the girls reported more activities later. If the results are due to response bias in answering the interviewer, why should the boys in one set of experiments be biased favorably, and the girls in another set? The conclusion seems inescapable that the achievement motivation training courses had demonstrable long-term effects on achievement related activities outside of school, although these effects varied considerably depending on the type of training experienced.

Variations in Training Effectiveness

What factors influenced the effectiveness of achievement motivation training? The Harvard group concentrated on trying to find out what factor or combination of factors would maximize the impact of achievement motivation training on school children. Many variables were found to be important.

Age and maturity. How early can *n* Ach training be introduced into the schools? The question received attention because *n* Ach training had started with adults and obviously it had to be revised considerably if it was going to be used with young children. Furthermore, many observers of the school system have noted that if motivation training is to do any good, it has to be introduced fairly early before children get set in a learning "track" which prevents them from switching to a track requiring a higher level of accomplishment. The Harvard group showed that effective achievement motivation training could be given to 11-year-olds, although in general the "action" inputs (games, etc.) proved more useful than the "thought" exercises which required a level of abstraction that was too high for at least some of the children. The St. Louis group also showed that effective achievement motivation training could be integrated into the regular curriculum for sixth-graders. Some efforts have been made by Stivers and Kowatrakul (1969) to give some kind of achievement motivation training for kindergarten-age children using largely games, but the effects were not impressive and for the moment it seems safer to conclude that achievement motivation training, at least in its present form, is best suited to the junior high shcool years and above. Ryals (1969) found that the effectiveness of training did not seem to be a function of moral maturity as measured by the Kohlberg instrument among 8th and 10th graders, although the program, in general, was more effective for the 8th graders.

Sex. A number of the studies show important sex differences in the impact of various types of training. The traditional training as designed for adult businessmen was oriented almost entirely towards male preoccupations and life style. The first studies in the schools employed only male subjects. Later, when girls were included in the courses, it turned out that the effects of the usual type of training were greater on boys than on girls, at least so far as achievement activities outside the school were concerned. The deCharms group has not reported sex differences in improved academic achievement as a result of achievement motivation training. On the other hand, the courses given at the Broad Meadows Junior High School in Quincy generally were more effective in producing long-range changes in girls' achievement activities outside school (Alschuler, 1971). These courses differed from the earlier ones in that some of them stressed learning the motivation materials to mastery and also restructuring math classes so that they required use of the strategies taught in the achievement motivation courses. The boys generally liked restructuring and insisting on mastery less than the girls, and the boys did not later report that they were involved in as many achievement related activities as the girls. The results may be due to initial differences between the girls in the treatment conditions, but it is at least suggestive that structuring achievement motivation training may help girls to benefit more from it, whereas boys tend to benefit more if it is given in its traditional form in which they are freer to take it or leave it.

Subject matter. What evidence there is suggests that achievement motivation training improves performance more in those subject matters which require more concrete action. Kagan and Moss (1962) reported that the n Achievement score in boys is highly correlated with "constructional activities"--which require concrete, explicit actions that give immediate feedback as to whether they are done correctly or not. The data reported in Table 1 from the Ryals' study (1969) confirms the fact that achievement motivation training improves performance in math and science more than in social studies. Mehta and Kanade (1969) have reported that trained high school boys in India score significantly higher two years after training than matched classmate controls on higher secondary examinations in physics, chemistry and mathematics. These findings make good theoretical sense because many studies have shown that people with strong achievement motivation are interested in concrete feedback on how well they are doing and tend to set goals in concrete enough terms so they can measure more or less precisely whether they are moving closer to those goals or not. In fact, much n Ach training involves teaching participants to plan their progress in these concrete terms. Some subject matters like literature and social studies do not readily permit this degree of specificity in measuring progress.

Several of the Harvard studies contrasted the effectivenesses of more or less complete courses with those which emphasized or left out one or another aspect of the training. A complete course involved teaching achievement motivation in thought and action, self-study, goal setting and planning, and some morale building or group solidarity inputs. In general, courses which involved all of these characteristics were more successful than those which involved less than the total package. However, age made a big difference here. With younger children, aged about 11, teaching the achievement action strategies seemed more effective than just teaching achievement thinking. With older children, aged around 16, on the other hand, leaving the achievement action strategies out and stressing achievement thinking and planning seemed to subtract little from the effectiveness of the training.

The way the courses were taught was also systematically varied. Usually the participants went through the various exercises, performing very differently on particular ones, learning as much as possible from mistakes and from observing how others performed. The objective was to maintain the interest of the students as much as possible and no attempt was made to make them go back over what they had experienced until they had learned it to some standard of perfection. These were called "satisfaction" courses. Other courses followed the programmed learning model in the sense that students were required to master the material to a criterion before being allowed to go on to another exercise. It seemed possible that requiring a higher level of mastery of the achievement motivation exercises might improve their effectiveness in the long run. This did not prove to be the case, at least for the boys, who generally disliked the mastery courses more and learned less from them. On the other hand, the reverse tended to be true for the girls: those who experienced the mastery courses reported significantly more achievement related activities one to two years later than the girls who had had the traditional "satisfaction" courses. These preliminary results suggest that there is a sex by treatment interaction and that one style of teaching is better for boys in general and the other for girls. Such a finding is of no particular use to the classroom teacher who must somehow find an approach which is appealing and effective for both sexes.

Classroom structure. A persistent problem throughout the research was how the motivation training should be related to traditional classroom instruction. I have already noted that the St. Louis group under Professor deCharms put the regular teacher in charge of the motivation training who usually integrated it with other classroom work over a considerable period of time. This approach seems to be clearly more effective than "segregated" motivation instruction by outsiders so far as improving academic performance is concerned. However, since the deCharms group did not obtain any long-term follow-up measures outside the school, it is not possible to say whether it is equally effective in producing work and career-related changes.

The Harvard group having concentrated on training the children separately from the regular classroom began to worry about whether teachers would not do things that would discourage the new strategies of goal setting and learning taught in the motivation courses. So some math teachers were persuaded to restructure their regular course work in a way which would be consistent with the approach taught in the motivation courses. For instance, a contract system was introduced in which the pupils had to choose how many problems of a given difficulty that they wanted to solve by a given date. They made the choice working from a table on which it was shown what grades would be awarded for doing various numbers of problems as a function of their difficulty, whether or not the person handed the exercise in on time, without mistakes, etc. Thus, the pupils had a chance to set moderate goals for themselves as they had been taught to do in the achievement motivation course, whereas in the traditional math class the teacher assigns the same number of problems to be done by all students regardless of their ability to do them. As noted already, there was a sex difference in the reaction to the restructured classroom. All the students disliked it more than the traditional math, but the boys particularly disliked it, got less out of it, and showed fewer long-term effects from it than the girls.

The restructured classroom by itself had no effect on math performance or achievement motivation. This last finding was also confirmed by other studies undertaken for the project. It had seemed possible from the beginning that the right kind of classroom climate might encourage the development of achievement motivation without formally introducing instruction in motivational concepts at all. Thus, it was with some hope that the staff of the Harvard project evaluated the motivational impact of educational innovations in the Duluth, Minnesota and Newton, Mass. school systems. In both cases, the instruction had been drastically shifted from the traditional classroom structure in the direction of giving children more autonomy in deciding what they decided to do, when, and how they went about getting the information necessary to complete their work. This emphasis on self-reliance and self-direction, we thought, might increase achievement motivation, but in fact, it did not in either case (Alschuler and Ham, 1971; Alschuler and Zelnicker, 1971). In the Duluth study it appears that the achievement motivation of the girls was actually lowered by the increased stress on self-reliance. Since none of these classroom restructurings seemed to be increasing achievement motivation indirectly, the inference is inescapable for the present that some kind of direct instruction in achievement motivation is essential if long-range effects in pupil behavior are to be obtained.

Helping the Teacher

The research findings so far reported are of interest to the educator in demonstrating that achievement motivation training can have some very important effects both inside and outside the classroom and in showing how it can be made more or less effective for younger or older boys and girls in different kinds of settings. However, the goals of the research were also to be useful to the average classroom teacher. So the project's staff tried hard to find ways to make the information that was being accumulated available in some generally useable form. Too often research information never gets converted into teacher practice. Several steps were taken to disseminate information about achievement motivation training in the schools. The most important was the publication of *Teaching Achievement Motivation* by Alschuler, McIntyre, and Tabor, a manual which explains in detail the techniques of motivation training used in the Harvard experiments and to a considerable extent the St. Louis experiments. It is designed to give the classroom teacher practical information on how to conduct the classroom exercises which develop achievement motivation. Since several of these exercises require forms or workbooks to be filled out by the students, attractive booklets were designed for this purpose and published by Education Ventures, Inc. They are: *Ten Thoughts*, a manual defining and describing different aspects of the achievement motivation thought sequence or coding system; *Who Am I?*, an exercise book designed to help the student figure out who he is and whether or not he is or wants to be achievement oriented; *Aiming*, a workbook in which the pupil learns to define goals and outline the means of attaining them; and *The Ring-toss Game*, and *The Origami Game*, booklets which put pupils through games which teach them achievement oriented strategies in action. A multimedia slide-sound show is also available from EVI, entitled *What is n Ach?* which is useful in orienting school officials and teachers as to the nature of achievement motivation when they are considering whether or not they want to introduce instruction in the area. It can also be used to orient pupils in the early stages of an achievement motivation training sequence. Finally, the staff of the Harvard project spent a considerable amount of time in the last year or two of its existence giving workshops for teachers on achievement motivation so that the materials could be tested, tried out, and made as useful as possible for the classroom. A further purpose of the workshops was to encourage teachers to try out achievement motivation training and to give them the knowledge necessary to do so. (See Appendix IV)

As we trained the teachers and worked with them more directly, it became clear that many of them wanted to restructure their classrooms along lines which would be more consistent with what they had learned themselves in the achievement motivation course. Some of them wondered if achievement motivation training in itself was really necessary if they reorganized what they usually did in ways that would encourage the students to develop their achievement motivation. As noted above, our experience with simply restructuring classrooms had not been altogether favorable. It was obviously important to get at how pupils *perceived* the attempts at restructuring. A teacher might decide to give more individual responsibilities to encourage achievement motivation, but if the students perceived this change as introducing great confusion as to what they were supposed to do, the teacher would not have gained much (as in the Quincy restructuring experiment). So the project turned its attention to designing a classroom climate questionnaire which would give the teacher feedback from her pupils as to how her behavior was perceived.

The questionnaires were patterned after similar ones designed by Litwin and Stringer (1968) who had been studying the effects of organizational climate on motivation in simulated business settings. Staff and workers (all business school students) were recruited to work in an elaborate two-week long production game organized in three quite different ways. In one "company", British Radar, "the President placed emphasis on the maintenance of a formal structure. Members of the organization were assigned their roles, their spheres of operation were tightly designed, and they were held responsible for the strict performance of their duties." The questionnaire given to everyone in this company at the end of the two-week period clearly showed that they perceived their organization as authoritarian and knew that they were expected to toe the line and be highly disciplined. They also scored higher in a fantasy measure of power motivation (*n* Power). By analogy it seemed obvious that some teachers run their classrooms in a very similar way. So Litwin and Stringer items applying to business procedure were rephrased to apply to classroom procedure to make up two questionnaire scales measuring emphasis on discipline and pressure for high performance. Presumably classroom climates scoring high on these dimensions would produce effects like those in the comparable business simulation.

In another of Litwin and Stringer's "companies", Balance Radar, "a loose informal structure was endorsed by the President...he stressed friendly, cooperative behavior, group loyalty, team work...." The climate questionnaire showed that the members of this organization perceived it as a warm, friendly group, and their affiliation motivation scores (n Affiliation) were elevated. Similar items were included in a classroom climate survey to get at the extent to which the pupils perceived the teacher and the other members of the class as warm and friendly.

Finally, in still another simulation, Blazer Radar, "high productivity was valued by the President...Each participant was encouraged to set his own goals and to take personal responsibility for results....Competitive feedback was given frequently so that progress towards the goals could be easily evaluated. Rewards for excellent performance were given in the form of recognition and approval...." Questionnaire results correctly reflected the fact that the participants in this simulation felt that they had been given more responsibility and more feedback on how well they were doing. Their achievement motivation scores were also higher, and in the end this business organization outproduced the other two. It was therefore reasoned that a teacher who could produce a climate that was perceived in this way by her pupils might be encouraging achievement motivation and better performance. So Litwin and Stringer items were rephrased for the classroom climate survey which measured the dimensions of responsibility and feedback.

Factor analysis of the classroom climate survey showed that psychometrically it needed further development. The scales designed to measure the different dimensions of climate did not come out as clearly as one could wish for and some of the scales were ill defined with relatively few items consistently measuring them. Furthermore, no evidence has yet been gathered showing that the same results were obtained in the classroom as had been obtained in the simulated business situation--showing for instance, that teachers who are perceived as stressing responsibility and feedback produce higher achievement motivation and better performance in their pupils. The chief value of the classroom climate survey so far has been its use as a teaching device. To dramatize the three types of classroom climates, multimedia film-slide-sound shows were produced in collaboration with Education Ventures, Inc. and Intermedia Systems Corporation. One each illustrated power-, affiliation-, and achievement-oriented classrooms. The slides, films, and tapes were taken during actual classrooms and teachers observing the shows found it easy to believe what they saw and to identify with the various problems the teacher was facing. As they tried to think through the ways in which they wanted to create different climates in their classrooms, they found the behavior of the teachers observed of great importance in guiding them as to what to do. Further, climate surveys had been filled out by the pupils in each of the three classrooms, and the teachers in the workshops therefore had an opportunity to compare their own perceptions of the teachers' styles with how they were perceived by the pupils in those classrooms. Finally, the teachers left the workshops with copies of the climate survey so that they had a device for not only assessing how they were currently perceived, but how they might be perceived at some future date after having made structural changes. With this additional assessment device, it would be unlikely that any of them would find himself in the situation we uncovered in the restructured math class in Quincy, Mass. As noted earlier, the teacher had restructured the classroom to give more responsibility to the students and to give them feedback tied closely to their performance, but it had been done in such a way as to make the students feel that the class was disorganized and they were getting little help. So the restructuring did not improve performance because it had changed the classroom climate in undesirable ways.

The St. Louis group under Professor deCharms had also concerned itself with classroom climate, but developed a different questionnaire for pupils to fill out which focused exclusively on the extent to which the teacher had fostered an "origin" climate. By an origin climate, he meant one in which pupils felt that they were in control of what they did in the classroom, that they could set their own goals, find their own means of obtaining them, feel rewarded for doing things on their own, and develop self-confidence. In other words, they felt like origins in the classroom rather than pawns. In comparison with the Harvard Climate Survey, the St. Louis instrument stresses the achievement oriented dimension as contrasted with the power dimension and leaves out the affiliation dimension. deCharms and associates also developed an origin score for TAT stories, the components of which were very similar to those just described for the origin questionnaire. The results of their studies are summarized in Figure 2. As previously noted (Figure 1), they found that *n* Ach training for teachers converted into *n* Ach training for pupils leads to gains in school learning from one grade to the next. But they also found that teachers who had been trained in achievement motivation tended to operate classrooms which were perceived by the pupils as encouraging more origin behavior. That is, the pupils felt more like origins in classrooms operated by *n* Ach trained teachers. Furthermore, the deCharms' group found that classrooms with high origin climate scores tended to contain pupils who gained more in school learning, whether or not the teachers in those classrooms had been trained in *n* Ach. In other words, some teachers naturally create origin climates without special training and without introducing achievement motivation training for their pupils.

Insert Figure S.2 about here

These teachers also produce greater gains in school learning. Thus it can be argued that what *n* Ach training does is help teachers to create the kind of climate (which some teachers create spontaneously) which fosters school learning. The presumed mechanism by which this

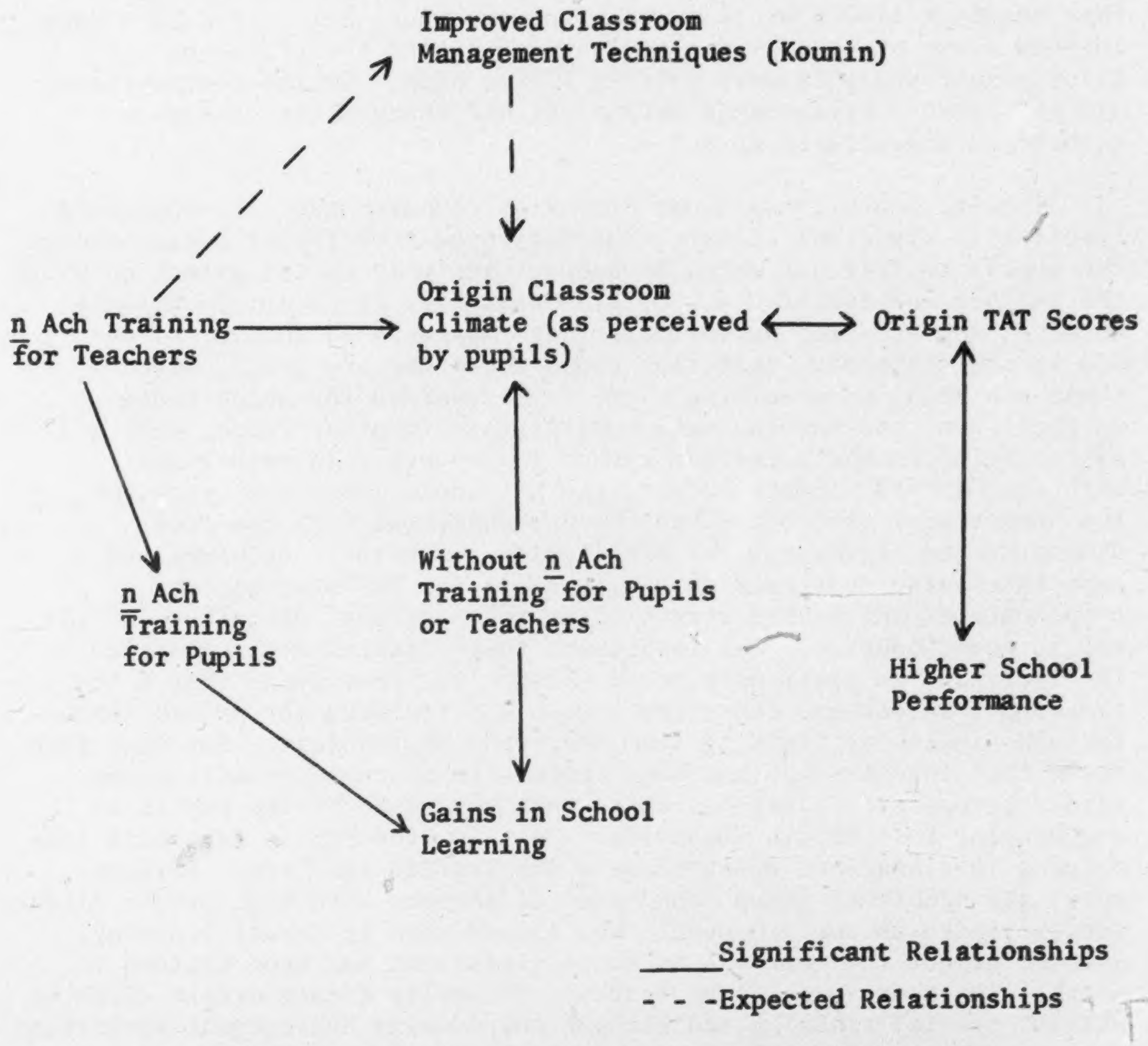
Improved Classroom
Management Techniques (Kounin)
n Ach Training
for Teachers
Origin Classroom
Climate (as perceived
by pupils)
Origin TAT Scores
n Ach
Training
for Pupils
Without n Ach
Training for Pupils
or Teachers
Higher School
Performance
Gains in School
Learning
Significant Relationships
- - -Expected Relationships

Figure S.2 OBTAINED (⟶) and Expected (– – →) Effects of Motivation Training for Teachers on Classroom Climates and Gains in School Performance (deCharms' studies).

takes place is that origin climates foster origin thinking, as reflected in higher origin TAT scores of pupils in these classes. Origin TAT scores are in turn associated with better school performance, with IQ partialed out, although the St. Louis group has not yet shown that origin TAT scores predict gains in school learning.

Figure 2 raises the further interesting question as to just how n Ach training for teachers produces origin climates and gains in school learning. A recent research report by Kounin (1970) suggests what classroom management techniques may be involved (broken lines in Figure 2). In studying carefully video tapes of classrooms in which students were really involved or not involved in their work, he was able to identify characteristic behaviors on the teacher's part which were highly correlated with whether her students were involved in their work and free from deviant behavior in the classroom. For the sake of analytic clarity, these characteristic teacher behaviors can be grouped under three main headings:

(1) Getting attention. Here he found that such teacher behaviors as challenge arousal, zest, variety in learning situations, were very important for getting work involvement.

(2) Insuring participation. The central variable here seemed to be whether the teacher was able to keep all of the children on their toes most of the time by such techniques as group alerting (so that they could not know who was going to be called on next), variety in learning, requiring child responsibility for recitation, and the like.

(3) Making individuals feel accountable. Here Kounin's most important teacher variable he called "withitness" or the ability of the teacher to communicate "that she knows what is going on regarding the children's behavior." She can attend to "two issues simultaneously when two different issues are present." What this means from the child's point of view is that he knows that he is going to be correctly identified with whatever he does, and held accountable either positively or negatively for it. Kounin discovered that a lot of teachers misidentify who does what in a classroom. They are clearly not "withit", and students are apparently discouraged from participating responsibly in the classroom if they feel that the teacher does not know what is going on.

These three dimensions of teacher behavior are, of course, well-designed to foster learning. If a child is to learn, he must first pay attention, then make a response (participate himself), and get correct feedback as to whether he has done it right or not. Now let us turn back and take a look at achievement motivation training in the light of this analysis. What it involves both for the teachers and for the pupils is an improved technique for insuring that these three processes are heightened in the average classroom. The motivation training materials and methods are novel and varied, so that they insure attention. They are tailored to individuals and require participation by everyone in the classroom in playing a game or filling out a form, and they give very precise feedback on an individual basis as to whether the person has done the exercise well or not (e.g., learned the scoring system for n Ach, or obtained a high score on the Origami Game). In using the materials, the teacher is automatically applying many of the techniques which Kounin found to be associated with better work involvement in the classroom. She is also doing things which ought to make pupils feel more like origins in the sense that they are making decisions in connection with the various exercises as to what they want to do next. One could predict with some confidence that video tapes of teachers trained in n Ach would show them scoring higher on Kounin's variables than those not trained in n Ach. Hence the broken lines in Figure 1.

But notice that nothing so far has been said directly about increasing achievement motivation in pupils. If the analysis just given is correct, one should get improved learning in the classroom without its being necessary to assume that achievement motivation has been increased. This seems paradoxical because the initial purpose of the research was to try to increase achievement motivation in school children so that they would perform better. Is it possible that achievement motivation training improves school performance without increasing achievement motivation? Even deCharms in his analysis (See Figure 2) talks about increasing origin feelings, not increasing achievement motivation. It seems entirely possible that achievement motivation training is effective in the classroom without affecting much the level of achievement motivation in the students. What it does for the teachers is to improve their classroom management techniques, we have argued, and these in turn improve school learning by getting more attention, participation, and accountability from the students. The effect of the achievement motivation training on the pupils may be somewhat similar. It teaches them to manage their lives better, just as it taught the teachers how to manage their classrooms better. That is, the pupils learn to pay attention more to the goals they are setting in life, to participate more often in acts achieving those goals, and to collect feedback (through planning manuals, etc.) on whether or not they are moving toward those goals. Thus, motivation training techniques are simply encouraging them to plan their lives better, and the long-term effects picked up by the Harvard group of researchers may simply reflect that, rather than an increase in achievement motivation itself.

Such an interpretation has the added virtue of resolving a theoretical problem that plagued the research from the beginning. How could achievement motivation training improve school performance if level of n Ach is so clearly not related to school performance? The resolution of this paradox is now clear. Achievement motivation training may work, not by increasing n Ach, but by improving classroom and life management techniques. Are we then deceiving children in telling them we are giving them courses to increase their achievement motivation, when we are unsure as to whether in fact that is what we are doing? Not really. The contradiction is largely semantic in nature. "N Achievement", as a term used technically by psychologists, may not be increased by the courses, but certainly achievement thinking, achievement planning, and achievement consciousness are all raised by the courses, and so far as the layman is concerned, these concepts are synonymous with being more motivated to achieve.

A final word of caution is in order. While we have constructed an explanation of the impact of achievement motivation training which does not require an increase in n Achievement levels, we cannot be certain that such an increase does not occur. The problem is difficult to solve directly because the main measure of achievement motivation from the TAT cannot be used to measure n Achievement levels after the individuals have been instructed in how to write TAT's with high n Achievement content. Other measures, such as increases in achievement related activities out of school, could of course change as a result of other changes in the individuals such as a better style of life management. So it is hard to know, technically speaking, whether n Achievement levels have actually been changed by the courses. We cannot rule out the possibility, but at this stage of the game, we think it is more parsimonious and more theoretically sound to conclude that achievement motivation training courses improve school learning by improving classroom and life management skills rather than by changing n Achievement levels directly.

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Chapter 1

Introduction

Alfred S. Alschuler and David C. McClelland

As with much of social science research the core problem in the current efforts became clear only after a series of specific investigations with each success or failure progressively delineating the boundaries of the central unanswered question. When we began this research in 1965, we were asking two questions: "Can adolescent achievement motivation (n Ach) be increased?", "What combination of course inputs maximizes the motivational yield?" Partial answers to these questions allowed us to put the question more broadly and yet more precisely: What conditions increase the likelihood that initial changes produced by the training program will be maintained? In learning how to increase adolescent's motivation we were not interested solely in the temporary creation of an aroused motive. It is comparatively easy for the Psychological Educator to arrange the learning environment so that the desired information is grasped and repeated, the behavior produced and feelings experienced. It is considerably more difficult to make motivation resilient, information synergistic, behavior skillful and feelings more mature. We wanted to identify the conditions that allowed aroused motivation to be sustained long after the special learning environment of the course was absent.

Nevertheless, we were never interested in forcing permanent increases in motivation. Our goal was to make it possible for those students who *chose* to increase their n Ach, to do so in as many ways and for as long as they so desired. Thus, when we reached what appeared to be the maximum degree and variety of yields from n Ach training itself, we turned to one of the most significant social environments in which achievement strivings occur--the school. Our hope was to devise ways of restructuring classroom learning procedures to be more conducive to encouraging achievement motivation. In this way we hoped to provide additional support for students who wanted to exercise their achievement concerns, and increase the overall yields of n Ach training. As we observed normal classes in regular subject matter areas, we began to see specific conflicts our students faced. The structure of learning and student roles did not always allow individual goal setting and moderate risk taking, or encourage a restless spirit of creative independence. Devising ways of altering these structures, we predicted, would increase the likelihood that aroused n Ach could be sustained and enhanced in more areas for longer periods of time.

Although we collaborated with teachers in re-structuring the motivational learning opportunities in the classroom, after the research team left the school, the "decay" curve set in. Most traces of the seemingly productive collaboration slowly vanished. We had to become concerned with the conditions which increase the likelihood that aroused institutional changes will be sustained. In practical terms, solving this insitutional problem was instrumental to maintaining conditions receptive to the flourishing of increased student motivation. The problem is familar and as prevalent as attempts to innovate in ongoing social systems. Even the achievement program sponsored by SIET institute in India, where McClelland and Winter (1969) did their work, has not been adopted more widely there, or even maintained long after the researchers left. Returned Peace Corps volunteers report their frustrations in getting host nationals to adopt and integrate innovations in farming, teaching methods, and community services. In the United States we have watched well-intentioned educational innovations like bussing, individualized instruction, contract learning and computer-aided-instruction flounder and nearly dissolve as backlash within the community or conflicts within the school develop around the proposed changes. It seems almost as if innovations run into an innate institutional conservatism that transcends individuals, and maintains the status quo.

According to the theoretical formulations of Professor Talcott Parsons, "system maintenance" is one of the two functional imperatives of any social system. The other is "task performance." If a system is to attain its goals and survive, it must maintain norms and values and reduce the inevitable conflicts and tensions created by change introduced to accomplish its mission more effectively. Innovations in education have concentrated more on advanced technology for more efficient goal attainment than on system maintenance, i.e., ways this technology can be assimilated into the system with minimum disruption, or, procedures for helping the system accommodate to the changes. McClelland and Winter acknowledged their own neglect of system maintenance problems in introducing achievement motivation training into an educational institution in India.

> "Unfortunately we learned very little from this research that we can communicate explicitly about how to promote system maintenance. We can say very little of a formal nature about techniques of pattern maintenance employed... In fact, we only identified this as a major problem for research and interpretation after the completion of the project."
>
> McClelland & Winter
> 1969, p. 359 f.

As we have indicated already, the survival of an individual's aroused motivation appears to depend in large part on solving system maintenance problems at several levels--within the course as a system, in the individual's relations to classroom norms, values and procedures, and in helping the school adjust to, and maintain an institutional change like offering motivation development courses on a regular basis.

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*Black, M. ed., The Social Theories of Talcott Parsons, Englewood Cliffs N. J. Prentice Hall Inc., 1961.

A system's ability to attain its goals and to survive are highly interdependent: goal attainment is not possible if the system does not survive and survival is not possible if goals are not reached. Since system maintenance patterns support the task orientation, the successful management must proceed from an understanding of system goals and values. Parsons* argues that formal schooling is one of the primary agents of socialization and that, as such, its goals are 1) to generate commitments a) to basic social values and b) to the performance of a specific type of role within the structure of society, and 2) to develop capacities such as a) role competence, skill, and expertese, and b) "role responsibility." Parsons argues further that from the point of view of society, another basic goal of schooling is 3) to allocate manpower. In essence this means determining who shall have access to higher education. Since completion of high school has come to represent a minimum satisfactory level of educational attainment, the responsibility of allocating manpower means determining who shall go to college and who shall not. This allocation function seems to be accomplished in large part by the end of the ninth grade when students are enrolled either in the college or vocational program. There is relatively little shifting after this time into or out of these educational tracks. Given finite educational resources, personnel, funds, and materials are devoted mostly to (2a) developing competence or skills to perform roles as a college student or in a non-college vocation. Far fewer resources are devoted directly to (1a) developing broad social values (i.e., citizenship) and (2b) "role responsibility" (i.e., the configuration of motives appropriate to the specific role).

Achievement motivation training encourages commitments to (1a) basic social values such as independence, acceptance of personal responsibility for the consequences of one's actions, actively attempting to master the environment according to standards of excellence (Dreeben**). Even more directly this training attempts to develop (2b) entrepreneurial "role responsibility." In theory this is consistent with the functions of schooling as an agent of socialization. In practice, the implementation of these generally acknowledged goals requires some of the finite resources of schooling--time, funds, personnel--and thus, is a challenge to the current allocation of resources to (2a) the development of role competence. For example--as long as our research project provided the teaching personnel and funds to conduct achievement motivation training, administrators arranged student time for the training. Here, our participation added to the total resources and allowed the schools to accomplish all of their socialization goals more completely. When we left, however, schools typically did not redistribute their limited resources to maintain the training because this would have meant devoting less energy to what they considered their primary socialization task--developing role competence. There appear to be three basic alternatives to avoid this conflict: (1) change the school's value hierarchy of socialization goals, (2) find other social systems in which entrepreneurial role responsibility is more highly valued, and (3) show that this training is instrumental in developing greater role competence. Any of these alternatives would reduce conflict, increase the likelihood that motivation training will be maintained and help the system accomplish its mission more effectively.

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*Talcott Parsons, "The school class as a social system: some of its functions in American Society" Harvard Educational Review, Vol. 29, No. 4 Fall, 1969.

**Dreeben, R. "The Contribution of Schooling to the Learning of Norms" Harvard Educational Review, Vol. 37 #2 Spring, 1967.

This social system analysis also provides a framework for understanding Kolb's basic maintenance problem (1965). He found that of the under-achievers he trained, only high-SES boys sustained increased grade point averages for 1½ years after n Ach course. Schools allocate manpower and socialize role expectations for college and vocational areas primarily on the basis of "ascribed factors" (principally socioeconomic status) and "achieved factors" (i.e., being a "good" student in terms of grades and deportment) (Parsons, 1959). These factors may be represented graphically.

Role Expectations Socialized by Schools
as a Function of Ascribed and Achieved Factors

		Achieved factors (grades, deportment)	
		"Poor Students"	"Good Students"
Ascribed factors	high SES	role conflict	college
	low SES	vocational	role conflict

Kolb trained only "poor" students, i.e., under-achievers. It is reasonable to expect that Kolb's lower SES students would apply their entrepreneurial, n Ach training in areas related to vocational roles in and outside of school and not in academic courses oriented to success in college. In fact, Kolb did not find lasting improvement in grade point averages for the low SES boys and he did not assess possible gains in the vocational areas. The high SES, poor students in Kolb's study entered the course with conflicting role expectations. It can be argued that increased n Ach was seen by them as instrumental to becoming a "good" student and was applied in academic areas. This reduced their conflict and enhanced their ability to attain their goal of role competence.

McClelland and Winters' principal maintenance problem also is more understandable viewed from a similar social system perspective. The n Ach training was least effective for those men "not in charge," i.e., for men for whom neither ascribed role responsibility (head of household) or achieved role expectations (decision maker in business) were consistent with the entrepreneurial orientation taught in the course.

Whether and how this system conflict was resolved by the men is left unanswered by McClelland and Winter for lack of relevant data. It is unlikely that the family decision making patterns or the perogatives of subordinates in a business would accommodate sufficiently to their increased desire for personal responsibility. It is equally hard to imagine just what non-business contexts would be more receptive to an increased entrepreneurial drive. Given these major conflicts, increased n Ach probably was experienced as tension producing, a challenge to the norms and values expected of their social roles and as non-adaptive in their salient social systems.

These three examples illustrate the importance of a social system perspective in maintaining changes produced by motivation training, and Psychological Education in general. The investigations we have conducted over the last five years in one way or another all deal primarily with the question of maintaining change. For us this has meant finding resolutions for system maintenance conflicts and tensions engendered by the training. These problems occurred in the training program itself as a system, in the conflict between an achievement orientation and role responsibilities within normal classrooms, and in the larger social systems of schools. Our ultimate goal has been to increase the long term role competence and role responsibility of students by developing prototype solutions from achievement motivation training for the effects of Psychological Education courses.

Chapter 2

The Origins and Nature of Psychological Education[*]

Alfred S. Alschuler

At the joint frontier of psychology and education a new movement is emerging that attempts to promote psychological growth directly through educational courses. Psychologists are shifting their attention away from remedial help for the mentally ill to the goal of enhancing human potential in normal individuals. Educators, on the other hand, are beginning to accept these courses along with the unique content and pedagogy as appropriate for schools. At present there are psychological education courses designed to increase achievement motivation, awareness and excitement, creative thinking, interpersonal sensitivity, joy, self-reliance, self-esteem, self-understanding, self-actualization, moral development, identity, non-verbal communication, body awareness, value clarity, meditative processes, and other aspects of ideal adult functioning.[**] Some of these courses have been taught experimentally in schools, although most of them have been developed and offered in other settings such as industrial training programs, Peace Corps training, and private educational institutes. Protests, violence, riots and assassinations are doing for Psychological Education what Sputnik did to spur the new academic curricula in the last ten years. Psychological educators who have worked in isolated independence are beginning to meet together to foster mutual collaboration.[***] New centers of psychological education are emerging that offer these courses to the general public.* A number of large research and development projects have been funded to introduce this type of education into schools**, and recent national publicity (Howard, 1968) undoubtedly will increase in demand from students and parents for these courses. The psychological education movement clearly is gaining momentum.

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[*] Portions of this paper appeared in the Spring 1969 issue of the Journal of Humanistic Psychology.

[**] There is a comprehensive annotated bibliography on Psychological Education in Appendix I.

[***] The first conference on "Affective Education" was held in August, 1968, in Sausalito, California, under the sponsorship of the American Association of Humanistic Psychology and Esalen Institute. In April, 1969, a conference for 100 national and international leaders was sponsored by the Manpower Foundation and the American Association of Humanistic Psychology. The conference on "Voluntary Control of Consciousness" was held in Council Grove, Kansas.

Paradoxically, psychological education as a discipline is unorganized and inchoate. For the most part, psychological educators remain highly individualistic innovators within the field. Despite its strong ideological roots in the psychoanalytic tradition, this movement is viewed by many professionals as a brand new fad of unknown origins. In spite of the many unique goals, procedures and trainer skills common to all psychological education, there are only two graduate programs in the country to train psychological educators.*** In short, this burgeoning educational movement is not yet recognized as a legitimate discipline.

IDEOLOGY AND ORIGINS

Like past ideologies of personality change, psychological education grows out of a vision of human potential. This vision, and the methods of change associated with it, can be understood clearly only when they put in the perspective of past ideologies.

In pre-Christian Greece, those individuals who could not get along in the world, whom we would call "mentally ill" today, were viewed as possessing divine inspiration. Visions were not insane, but prophetic. These divinely inspired souls were feared and

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*The most well-known organizations are Esalen Institute in Big Sur, California; National Training Laboratories in Bethel, Maine; Western Behavioral Sciences Institute, La Jolla, California.

**Cooperative Program of Education Development (COPED) sponsored by National Training Laboratories and the National Education Association; Achievement Motivation Development Project sponsored by the Office of Education; Foundation grants to Western Behavioral Science Institute to introduce "basic encounter" techniques into a school system; a grant to Esalen to support the introduction of sensitivity training in elementary, junior, and senior high schools.

***Center for Humanistic Education, School of Education, University of Massachusetts, Amherst, Mass.

Program in Humanistic Education, State University of New York at Albany, Retreat House Road, Glenmont, New York respected, not pitied, punished or burned as they were several centuries later. Certainly the medicine man who spent his time collecting herbs and smelling urine was not fit to touch the fivinely possessed. Dictated by these beliefs, a sanctuary at Epidaurus was created in the 6th century, B.C. that compared favorably with most health resorts of the 20th century. The treatment was lavish for those individuals who were inhabited by the deities and could not function well in society (Henry, in Zilboorg, 1941).

With the rise of Christian institutions and the belief in a chain of communication between God, priests and man, those people seen previously as divinely inspired came to be seen as representatives of the devil, on a plane with the priests but direct challenges to the priests' God-given power on earth. Thus, it was incumbent upon men to demonstrate the superior strength of God by casting out the demons from the unfortunate bodies of the bedevilled. The resultant treatment consisted of beatings, collar harnesses in dark, damp cells, starvation diets and failing all else, burning at the stake.* These treatment procedures were dictated by a vision of goodness and evil as surely as Plato's 50-year educational program was dictated by his vision of the wise civil servant ruler and what was necessary to produce such a philosopher-king.

Despite several crusading attempts, demonology and its associated restorative methods were prevalent through the latter part of the 19th century. It remained to physicians to claim for medicine what had previously been religious concerns. In the process of asserting that "madness" was an organic "disease" and thus "curable", physicians brought with them a new ideology and method. The assumption was made that a science of mental illness must begin with a nosology, a classification of diseases, similar to the classification of elements in chemistry and other physical diseases. When these new disease entities had been identified, research into the organic causes could begin. As a result, physicians studied alcoholism, aphasias, paralyses and attributed them to such things as the lever actions of the limbs, disturbance of the muscle sense of the limbs, organic brain disease.

In particular, Emil Kraepelin's classification system brought to fruition the establishment of mental illness as an ideology and as a legitimate branch of medicine. We are heirs to this revolution. The care of the mentally ill is entrusted to doctors.

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*This and the following medical history is based on A History of Medical Psychology, Gregory Zilboorg, N.Y.:W.W. Norton and Sons, Inc., 1941.

The mentally ill are placed in hospitals and there is widespread use of healing chemicals. Obtaining case histories, an art perfected by Kraepelin, remains a standard procedure. Legally required diagnostic labels given to the hospitalized mentally ill bear the stamp of Kraepelin's formative thinking. So pervasive is this thinking that it requires of us almost a Copernican revolution of thought even to consider the possibility that strange mental states and visions may not be "disease symptons" needing a cure. Our belief is firmly rooted in Kraepelin's scientific ideology, just as incarceration and punishment were methods emanating from deep-seated beliefs in demonology.

Psychoanalysis, the second psychiatric revolution, was a child of this scientific ideology. One of Freud's chief contributions was to persuade others that "mental illness" could have psychological as well as physical origins, that forgotten psychological traumas could leave permanent psychological scars and debilitation as surely as physical traumas, (e.g., broken limbs) if not treated, would leave physical debilitation and scars. Further, Freud showed that a psychological talking "cure" was possible if the "patient" re-experienced the original trauma and worked it through, much as an operation opens the body to correct the source of a disease so that it can heal properly. Because Freud believed that psychoanalysis was a method of learning about one's self as well as a method of medical treatment through emotional re-education, he recommended that experts from a number of disciplines be trained to do psychoanalysis (Freud, 1927). However, the medical doctors who brought psychoanalysis to this country have kept it tightly locked within their profession to be used solely as a healing technique.

The psychoanalytic ideology has stimulated many developments in the last 50 years, 2 of which specifically paved the way for psychological education. First, numerous additional methods of affective re-education have been created ranging from variants on the "talking cure" (client-centered therapy, direct analysis sector therapy, play therapy), to varieties of group therapy (marital, family, ward, psychodrama), to complete environmental control (kibbutzim, "brainwashing"), to the many short exercises designed to promote a specific, limited affective experience (game simulations, role plays, programmed units). In addition, learning theory had developed to the point where numerous techniques are available to help people systematically unlearn certain behaviors, and learn other healthier behaviors (Wolpe & Lazarus, 1967). In short, a large repertoire of methods exists besides psychoanalysis to foster affective education and behavior modification.

A second development was stimulated in reaction to Kraepelin's and Freud's exclusive attention to mental illness. Most psychiatrists and psychologists were seldom at a loss for words to describe even the subtlest nuances of mental illness or to hypothesize about the origin and vicissitudes of psychoses. However, psychiatrists and psychoanalysts were considerably less eloquent when asked to describe "mental health", maturity, or ideal psychological functioning. Bound to the ideology of "mental illness", "disease", and "cure", mental health was either the absence of psychological symptoms or "the ability to love and work", a definition which made mental health inaccessible to the very young and the very old. Beginning with Carl Jung's descriptions of "individuation" (Jung, 1959; Progoff, 1953) attempts were made to characterize the ideal states of human development (Allport, 1961; Erikson, 1959; Jahoda, 1958; Maslow, 1962; and Piaget, 1960). Whether the description was a list of traits, states, healthy crisis resolutions, or capacity for cognitive operations, the rationale for the descriptions was the same. The impetus was to fill a gap by describing in detail the ideal and states of human development.

After the articulation of what lay at the positive end of the spectrum of human functioning, it was a natural step to use the existing repertoire of change techniques to promote those ideal states. However, psychological education courses were not created and implimented so logically, so systematically, or so simply. Although psychological education was an immediate, reasonable and enticing possibility, until recently the need for this new approach to promoting growth had not crystalized within the community of psychotherapists and the community of educators.

Psychotherapists have begun to realize that their traditional methods and settings are inadequate to deal with the magnitude of psychological problems in society. The extent of violence in the streets stands in bold defiance of the inefficient, long term, one-to-one therapeutic relationships that take place in small offices and safe hospital rooms. The number of existing and potential psychotherapists is hopelessly inadequate because the problems are not just among the mentally ill and because any type of remediation, ipso facto, is too late. From this perspective, psychotherapy is not so much wrong as basically inappropriate to alleviate widespread racism, aggression, interpersonal insensitivity, moral irresponsibility, and non-self-actualization. More efficient methods are needed to promote psychological growth, thus preventing these human problems from occurring and making remediation unnecessary. New settings are needed that reach the larger population. In the current climate of urgency it is not surprising that psychologists are looking seriously to the educational system because of its universal coverage, its large source of potential psychological educators and the appropriate emphasis on learning and personal growth.

Conversely, educators are turning to psychologists, not for additional help in increasing the rate of knowledge acquisition, but to find out what more schools can do about prejudice, violence, lack of motivation and uncurious, uncreative students. The riots and assassinations have focused attention on these problems and sharpened the realization that schools are doing almost nothing to prepare students vocationally and psychologically for life after high school. Thirty per cent, or 15 million of the 50 million students in school will not graduate from high school. This staggering number of dropouts will enter the labor market unprepared. A total of 40 million students will not complete college and only six million of these students will have had any significant amount of vocational education. For the vast majority of students, what they are learning in school is not so much wrong as basically inappropriate.

It is increasingly clear, however, that more vocational training in particular, or better curricula, teacher training, and physical facilities in general will not be sufficient. The Coleman Report on Equality of Educational Opportunity (1966) has shown that student attitudes towards themselves and about the responsiveness of the world to their efforts are more strongly related to academic gains than differences in curricula, facilities or teacher training. In addition to vocational training, schools will have to take greater responsibility for promoting the growth of attitudes conducive to learning and to continued psychological growth. In a recent study of 440,000 high school students across the country, the American Institutes for Research concluded that schools fail to help students develop a sense of personal responsibility for their own educational, personal and social development, and that schools must prepare students more fully for citizenship and mature adulthood (Flanagan, 1967). Thus, from a teacher's point of view, there is double reason and double gain from courses designed explicitly to promote aspects of psychological growth: increased learning in school and more effective, socialized self-actualizing adults after school.

In the last ten years individual psychotherapists and teachers working independently have created a number of prototype psychological education courses, none of which has been widely introduced into public education. Because the demand for these courses is increasing, it is important to examine carefully the goals and current status of psychological education.

GOALS OF PSYCHOLOGICAL EDUCATION

The goals of psychological education courses sound vague, varied, overlapping, universal, and highly desirable: creativity, joy, awareness, sensitivity. On the one hand this pleasant semantic confusion reflects the absence of a single definitive description of ideal psychological (or "eupsychian") states. On the other hand, the words are somewhat misleading. As in social science research, what really counts is the operational definition of the goals. In psychological education the course procedures are the best clues to the course goals since it is through these procedures that the desired psychological states are fostered in the course. For example, Outward Bound courses attempt to promote "self reliance" (Katz & Kolb, 1968). Most of the course exercises ask students to engage in physically difficult tasks like scaling a cliff or swimming 50 years underwater in one breath. Outward Bound courses usually end with a solo survival experience in the wilderness in which the trainee lives off the land. Procedurally, "self-reliance" is defined as mastering these challenging physical tasks. Similarly, it is possible to clarify the goals of other psychological education courses by focusing on their procedures. When this is done, four common eupsychian goals emerge quite clearly.

First, most courses contain procedures to develop a constructive dialogue with one's own fantasy life. In synectics training, a creativity course, students are asked to "make the strange familiar" by fantasizing themselves inside a strange object, or to "make the familiar strange" by fantasizing about a common object (Gordon, 1961). In other creativity courses, remote associations are encouraged in order to attain a new, useful and creative perspective on some problem (Allen, 1962; Brown, 1964; Parnes & Harding, 1962; Olten, 1966; Osborn, 1963; Uraneck, 1963; Whiting, 1958). In other psychological education courses students are taken on guided tours of day dreams and night dreams and on fantasy trips into their own body (Perls, Hefferline & Goodman, 1965; Schutz, 1968). In achievement motivation courses students are encouraged to fantasize about doing things exceptionally well and are taught how to differentiate between achievement imagery and plain old task imagery. Later in the course these achievement images are tied to reality through careful planning and projects (Alschuler, 1967; Kolb, 1965; McClelland, 1965). These eupsychian procedures often bring previously ignored aspects of one's personality into awareness. Usually this is a joyful, enhancing experience in contrast to psychoanalytic dream analysis, and free association which are oriented to uncovering unconscious conflicts. The implication of these eupsychian procedures is that most adults don't make constructive use of their fantasy life and have forgotten how to enjoy fantasy in a childlike but healthy way.

A second set of extremely common procedures involves non-verbal exercises, such as silent improvisations, free expression dance movements, meditation, the exaggeration of spontaneous body movements, and a wide variety of games. Often it is easier to understand psychological concepts when they are learned motorically rather than simply comprehended intellectually. For example, in achievement motivation courses, the concept of "moderate risk taking" is taught through a darts game in which the student must bid on his performance and only "wins" when he makes his bid. A very low bid earns few points while a very high bid is nearly impossible to make. The game experience subsequently is generalized to other life situations. In sensitivity training and encounter groups, nonverbal exercises are used to increase channels of communication. Some personal feelings can be expressed more effectively in motions than in words. Other times nonverbal activities are used because they increase one's expressive vocabulary and are simply joyful experiences. As with constructive fantasizing, proponents of these methods believe that this type of expression, communication and learning is underdeveloped in most people (McClelland, 1965; Moore, 1960; Murphy, 1967; Howard, 1968; Newberg, undated; Perls, Hefferline & Goodman, 1965; Ruesch & Kees, 1956; Schutz, 1968; Spolin, 1963).

A third set of typical procedures focuses on developing and exploring individuals' emotional responses to the world. In most courses, how people feel is considered more important than what they think about things. Without these emotional peak experiences ranging from laughter and exhilaration to tears and fear, the instructor is likely to consider the course a failure. For example, if an adolescent is scaling a cliff in an Outward Bound course and does not feel any fear, he will not increase his self confidence through his accomplishment. Similarly, techniques in sensitivity training foster intense emotional confrontation with other group members. Trainees are encouraged to express their feelings openly and honestly. They learn to recognize their anger, for example, and to resolve it maturely, rather than allow it to create continued inner turmoil. In achievement motivation courses strong group feelings are developed to help support the individual in whatever he chooses to do well. In all of these courses there is a shared belief that affect increases meaningful learning and that the capacity for the full range of affective responses is a crucial human potentiality often underdeveloped in adults. As a result, a wide range of techniques to enhance affect have been created (Borton, 1966 and 1967; Bradford, 1964; Litwin, 1966; Peterson, undated; Schutz, 1968; Yablonsky, 1967).

A fourth characteristic set of procedures emphasizes the importance of living fully and intensely "here and now". The emphases takes many forms. In Gestalt awareness training the goal is philosophically explicit (Perls, Hefferline & Goodman, 1965). In most courses it is subtle and implicit. Usually psychological education courses are held in retreat settings which cut people off from past obligations and future commitments for brief periods of time. The isolated resort settings dramatize the "here and now" opportunities. In general there is little emphasis on future "homework" or past personal history as an explanation for behavior. A vivid example is Synanon, a total environment program for addicts, which promotes "self actualization" and in the process cures addiction. Synanon requires the addict to kick drugs immediately upon entering the program. Other "bad" behavior which stands in the way of self actualization is pointed out as it occurs. Historical explanations for bad behavior are considered excuses and are not tolerated (Yablonsky, 1967). In other psychological education programs the games, exercises, group process, etc., are model opportunities to explore, discover, and try out new behavior here and now. Most of these courses consider references to the past and future as escapes from the present opportunity. The assumption is that if a person can't change here and now, where the conditions for growth are optimal, he is not likely to continue growing outside and after the course.

These four eupsychian states are clearly in the Freudian tradition. The critical moment of growth in psychoanalysis occurs in the cure of the transference neurosis. The patient has an intense emotional realization of how he has transferred his childhood irrational fantasies to the here-and-now therapeutic context. He acts out his neurosis in the therapeutic relationship. The new awareness stemming from the catharsis allows the patient to change in meaningful ways first in the therapeutic relationship and then outside. These same elements exist in most psychological education courses, but they are transformed . Students discover the creative power of their fantasy life, not the destructive aspects of unconsciously motivated fantasy. Highly sensitive, understanding communication is experienced by attending to nonverbal cues, whereas in psychoanalysis, behavioral tics and "acting out" are probed for their neurotic messages. Intense affect is more often ecstatic than angry and unhappy as in therapeutic experiences. In both types of change procedure the assumption is made that long-term change results from the changes which occur in the here-and-now relationship.

These four typical goals imply a broad cultural diagnosis. It is as if the creators of psychological education courses said that most people are highly verbal, future-oriented doers who place extreme value on analytic rationality. The result is that other aspects of human potential are left undeveloped or are destructively expressed. What is needed is the growth of healthier, more sensitive multi-level communication, the integration of irrational fantasies into constructive responses and greater capacity of ecstatic emotional experiences. The relation between psychological education goals and the current social problems is a key reason why it is important to introduce these courses in schools on a widespread basis. A person who has developed sensitive nonverbal communication does not express himself hatefully or violently.

The goals and content of these courses differ from existing academic and vocational courses in several important ways. Psychological knowledge is experiential knowledge in contrast to academic knowledge (mathematics, science, history) which is appropriately abstract. Psychological knowledge is firmly rooted in the person's affect, fantasy, and actions, and is not merely deposited in the student's internal data bank. This is the difference between knowing about the revolutions of 1848 and experiencing the anxiety and uncertainty of changing a life style quickly, as when a parent dies or when one has an accident. It is the difference between knowing probability statistics and taking action when the odds are 50:50 for success. Obviously, psychological knowledge is as important for a student's repertoire as his academic knowledge or vocational skills.

There are also some similarities in psychological, academic and vocational goals. Like foreign languages, science, history and mathematics, psychological education teaches a new vocabulary and pattern of thought. Like vocational courses and athletics, psychological education courses teach new action skills through "exercises", "games", "role plays", etc. And, like psychotherapy, psychological education is concerned with affect. These statements are straightforward and unremarkable. But, consider for a moment how many courses attempt to promote a synthesis of all three. Typical high school curricula are divided into academic "thought" courses and vocational "action" courses (typing, shorthand, auto mechanics, etc.). It is not possible to divide psychological knowledge into separate compartments. For example, "Interpersonal Sensitivity" is a way of thinking, feeling, and acting in ongoing relationships with other people. Psychological education courses attempt to create and enhance this synthesis within the course itself in order to foster its occurrence outside and after the course.

In contrast to typical school goals, Psychological Education courses aim for long-term life changes, not short-term gains in mastery. More precisely, psychological education attempts to increase long-term "operant" behavior as well as respondent behavior. Operant behavior is voluntary, seemingly spontaneous and certainly not required by the situation. What a person does with his leisure time is an indication of his operant behavior since it stems from stable internal cues and needs few external cues to come forth. Respondent behavior, whether it is affective, cognitive or motoric, requires external cues and incentives before it will occur, just as an examination question brings forth respondent knowledge that otherwise probably would not have been demonstrated.

In practice, most school learning calls for respondent behavior: multiple choice and true-false questions, reading assigned chapters, solving a given set of mathematics problems correctly, or writing an essay to a prescribed theme. Interestingly, respondent measures of learning do not predict long-term operant behavior very well; perhaps because when school is over there are very few people who follow a person around defining the problems, presenting test questions and evaluating the response (McClelland, 1967; McClelland, et al., 1958). Success and fulfillment in work, marriage, interpersonal relations and leisure time, result more from operant than respondent behavior. Educational theorists have begun to draw attention to the importance of teaching which results in operant, voluntary, internalized, student behavior (Bloom, 1956; Kranthwohl, 1956). However, the key academic and vocational success criteria very likely will continue to be end-of-semester tests, standardized achievement tests, and other short-term respondent measures that fail to predict what the student will remember later and whether he will choose spontaneously to use what he learned.

The goals of psychological education courses will change in the future as a result of many influences. As in the past, some new courses will be developed for specific institutional needs. For example, industry was one of the chief financial backers for courses in creativity training because they wanted to increase the patent output of their research scientists. Recently the Peace Corps commissioned the development of self-assessment workshops to replace the psychiatric, illness-oriented diagnosis that had existed in Peace Corps training programs. It is easy to envision other new courses: identity formation courses for Upward Bound adolescents; individuation courses for elderly men and women; training in the "helping relationship" for parents, supervisors, teachers, and coaches. Although these courses will have different problem foci, most likely they will include the enhancement of fantasy, affect, and nonverbal communication in intense course experiences that develop eupsychian capacities.

It is also possible that the dramatically increased interest in these courses will breed psychological hucksterism. At present there is little long-term outcome research to prove, disprove, or improve the efficacy of the courses. There are few formal training institutions for psychological educators, no certification boards, and no professional organization specifically to promote and monitor the quality of training. In the face of growing demands for courses, these lacks are serious and the future of psychological education must include some attention to them if the movement is to become a viable and effective discipline available to the general population. There is hope that these courses may be introduced in public education, on a national scale, soundly constructed, effectively taught and properly sequenced. However, this will require long-term institutional support. Thus, the future of psychological education will be strongly influenced by how soon and how extensively university programs in education and psychology discipline the movement by bringing to it their inclinations to theory, their competence in research and their facilities for training legitimized psychological educators.

Chapter 3

Achievement Motivation: Its history and impact on history

Alfred S. Alschuler

Certain ideas in man's fantasy life are causally related to the rate of a nation's economic development. Although this statement may sound like a line from a book of black magic, the relationship between "achievement fantasies" and economic progress has been demonstrated through a series of research studies conducted by David C. McClelland and co-workers around the world over the last twenty years. In brief, men who have many achievement fantasies and think about making things concretely better tend to act in certain special ways. The related expressive style is best described as "entrepreneurial" behavior. When there is a relatively high percentage of achievement thinking and entrepreneurial behavior in a country, or, in other words, high achievement motivation, it eventually is reflected in a quickened rate of economic development (McClelland, 1961). One obvious implication is that increasing the amount of achievement thinking in a nation should result in faster economic progress, a prime goal of many underdeveloped countries and many disadvantaged peoples here and abroad. Psychological Education courses designed to strengthen adults achievement motivation have been successful in stimulating more energetic, innovative and entrepreneurial behavior (McClelland & Winter, 1969). The success of these courses led to the questions that are explored and reported in this book: Can adolescents achievement motivation be increased? What types of educational inputs maximize the gains in achievement motivation? Through the careful empirical study of this one type of psychological education, we hope to identify principles that will generalize to other types of Psychological Education and thus, bring needed disciplines to this new field as a whole.

The Definition and Measurement of Achievement Motivation

In reprospect, it is not difficult to understand how an interest in measuring human motivation moved from the laboratory into the field. McClelland's first goal was "to develop a method of measuring individual differences in human motivation (which would be) firmly based on the methodology of experimental psychology and on the psychological insights of Freud and his followers" (McClelland, 1961, p. 39). According to Freud, motivation is reflected in the fantasy lives of individuals much as the nature of a person's health or illness is reflected in blood samples. Interpretation of dream fantasy is one principal method psychoanalysts use to assess a person's motivations, hidden conflicts, and wishes. A second widely used method of eliciting fantasies of individuals is

Professor Henry Murray's Thematic Apperception Test (TAT). The TAT is a set of ambiguous pictures depicting a variety of common situations. Persons taking the TAT are asked to tell imaginative stories about what is happening, what led up to the situation, what the characters are thinking and feeling and how it will turn out. Both the TAT and dream analysis lacked a rigorous quantitative method of determining the strength and extent to which motives were operating in a person's life. It was here that McClelland integrated a scientific method with the Freudian approach by devising an affective method for quantifying human motivation reflected in TAT stories.

The first task in devising this method was to prove that motives are reflected in TAT stories. Just as Hull had experimentally manipulated drive states in animals (e.g., Hull increased the hunger drive by depriving animals of food for varying lengths of time), McClelland began by experimentally manipulating strength of food motivation in humans. McClelland obtained TAT stories from groups of Navy men who differed in the number of hours for which they had gone without food. The results showed that different degrees of hunger were reflected in different amounts of food imagery in the TAT stories. In other words, fantasy TAT stories could be used to measure the strength of motivation (Atkinson & McClelland, 1948).

The next steps were to choose a uniquely human motive, experimentally vary its intensity and identify the resultant changes in TAT fantasies. McClelland chose to study achievement motivation, one of the most interesting motives previously defined by Henry Murray (Murray, 1938). The intensity of achievement motivation was varied by giving different instructions to groups of individuals just before they wrote their TAT stories. One group was told that people who did well on the fantasy test were successful businessmen and administrators. It was assumed that these instructions would arouse achievement thoughts. The TAT responses of this group were compared to TAT responses of a group given "neutral" instructions. The specific kinds of thoughts which were present in the achievement group TAT's and absent in the "neutral" and "relaxed" set of TAT's became the operational definition of achievement motivation (McClelland _et. al._, 1953). Since this definition, or measure, is so critical to an understanding of the subsequent research, it will be presented in some detail here.*

The achievement motive is a pattern of thoughts and feelings associated with the planning and striving for some kind of excellence, as opposed for example, to the search for power or friendship. An achievement goal or image (AIM) is defined as competition with some standard of excellence. e.g., competition with others, competition against one's own past performance, striving for some unique accomplishment, long-term involvement in the mastery of a difficult discipline. The TAT story below contains an example of "unique accomplishment" achievement goal.

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*For a more detailed way of learning this coding system, the reader is referred to the following sources: _Teaching Achievement Motivation_, Alschuler, Tabor, & McIntyre, Middletown, Conn.: Education Ventures, Inc., 1970; _Achievement Thinking_, Alschuler & Tabor, Middletown, Conn.: Education Ventures, Inc., 1970; _Motives in Fantasy, Action and Society_, Atkinson _et al_, Princeton, N.J.: Van Nostrand, 1958.

> The boss is talking to an employee. The boss wants the employee, an engineer, to start working on a specially designed carburetor for a revolutionary engine. The job will come off okay and the engine will revolutionize the automobile industry.

If, and only if a story contains an achievement goal, then the story is searched for other aspects of achievement planning as an indication of the extent and intensity of achievement motivation. The following elements of achievement planning are counted:

NEED: expression of a desire to reach an achievement goal. "He wants very much to solve the problem."

HOPE OF SUCCESS (HOS): stated anticipation of success in attaining a goal. "He hopes to become a great surgeon."

FEAR OF FAILURE (FOF): stated anticipation of failure or frustration. "He thinks he will make a mess of the job."

SUCCESS FEELINGS (SuF): stated experience of a positive emotional state associated with a definite accomplishment. "He is proud of his acceptance to graduate school."

FAILURE FEELINGS (FaF): stated negative emotion associated with failure to attain an achievement goal. "He is disgusted with himself for his failure."

ACT: statement that something is being done to attain an achievement goal. "The man worked hard to sell more books."

WORLD OBSTACLE (WO): statement that goal-directed activity is obstructed by something in the external world. "His family couldn't afford to send him to college."

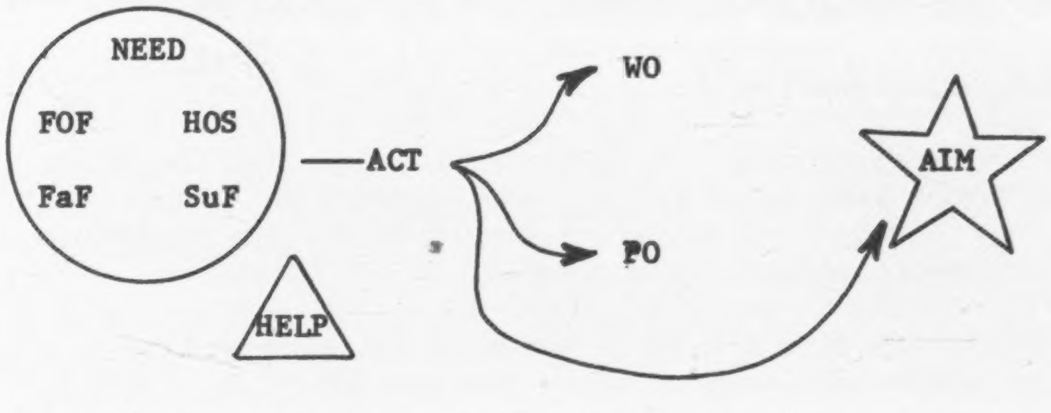
PERSONAL OBSTACLE (PO): statement that progress of goal-directed activity is obstructed by personal deficiencies. "He lacked the confidence to overcome his shyness."

HELP: statement of someone's aiding or encouraging the person striving for achievement. "His boss encouraged him in his ambitions."

ACHIEVEMENT THEME: the major plot or theme of the story is achievement, rather than affiliation or power.

The diagram below illustrates the elements of achievement planning.

Person's Feelings



The following is an example of a typical story produced in response to a TAT picture:

> A student is trying to answer questions on an exam and is finding the test too difficult to do as well as he had wanted. The student is not stupid, but he has a girl and didn't study as hard as he should have. He is unhappy that he didn't study harder, and hopes he has acceptable answers. He would cheat, but it is an honor exam, and he has too much character. He will get a D on the exam and will turn over a new leaf and devote the proper time to study.

This story contains examples of AIM, Act, PO, FaF, HoS, Ach Thema.*

It is clear that achievement motivation as defined above is not identical with our traditional notion of achievement as observable accomplishments, e.g., high test scores, attaining prestigious elected office, earning a high salary. Achievement motivation is a process of planning and striving for excellence, progress, doing things better, faster, more efficiently, doing something unique, or, in general, competing. It is not the accomplishments per se. Achievement motivation may be involved in a wide variety of activities.

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*For more exhaustive accounts of the development of the coding scheme, and of the vigorous methodological examinations which it has undergone, the reader is referred to chapters 7,8,9,10, 11, in Atkinson, 1958; Brown, 1965; Heckhausen, 1967; Klinger, 1966; Birney, 1959; Kagan & Moss, 1959; deCharms, 1968.

Thus, for example, a long distance runner, gourmet chef, organ pipe cleaner and architect all may have equally high achievement motivation. Increasing the strength of a student's achievement motivation will not necessarily lead to better grades in school, nor eventually to becoming a businessman. Increased n Ach may result in a variety of specific increased concerns for excellence.

THE SPIRIT OF HERMES: PERSONAL CHARACTERISTICS OF PEOPLE WITH HIGH n ACH

Having objectively defined n Ach, and established its reliability as a measure, McClelland opened the door to the hitherto neglected area of empirical research on motivation. In the years following McClelland's original research, hundreds of studies were conducted to explore further the nature, relevance, and effects of achievement motivation. Several of these studies concerning the personality characteristics of people with high n Ach had a particularly significant impact on subsequent theorizing and research. Researchers discovered that individuals with high achievement motivation tend to act in certain characteristic ways:

1. Such individuals are interested in excellence for its own sake rather than for the rewards it brings.

> Men high in n Achievement will not work harder at a task when money is offered as a reward (Atkinson & Reitman, 1956). They evaluate roles on the basis of the opportunities for excellence rather than those for prestige (Burnstein, Moulton & Liberty, 1963). Their achievement concern is not effected by having to work for the group rather than for themselves (French, 1958). They pick experts rather than friends as work partners (French, 1956; McClelland & Winter, 1969).

2. Individuals with high achievement motivation prefer situations in which they can take personal responsibility for the outcomes of their efforts. They like to control their own destinies rather than leaving things up to fate, chance or luck. (French, 1958; McClelland *et al*., 1953, pp. 286-287; Heckhausen, 1967, pp. 91-103.) They like to make independent judgments based on their own evaluations and experience rather than to rely on the opinions of other people (Heckhausen, 1967, pp. 134-136).

3. They set their goals carefully after considering the probabilities of success of a variety of alternatives (Heckhausen, 1967, pp. 91-103). Their goals tend to be moderate risks in which their efforts are neither doomed to failure nor guaranteed of success. The goals are challenging ones in which the outcomes are most uncertain. (McClelland, 1958; Atkinson & Litwin, 1960; McClelland, 1955; Atkinson, et al., 1960).

4. They are more concerned with the medium to long range future than men with low achievement motivation. (Heckhausen, 1967, pp. 42-45). They have a longer future time perspective (Ricks & Epley, 1960), show greater anticipation of the future (McClelland, _et al_., 1955, p. 250) and prefer larger rewards in the future over smaller rewards in the present (Mischel, 1960). Perhaps because of this acute awareness of the passage of time, men with high _n_ Ach see time as passing rapidly (Green & Knapp, 1959; Knapp & Green, 1960), and don't feel they have enough time to get everything done (Knapp, 1960). In order to keep track of progress towards their goals, they like to get immediate, regular, concrete feedback on how well they are doing (French, 1958; Moss & Kogan, 1961).

McClelland hypothesized that the pattern that emerges from these traits is very often characteristic of the energetic, entrepreneurial character type. He found a close fit between these empirically identified traits and the characteristics of entrepreneurs as described by economic and social theoreticians: namely, skill at making long range plans, energetic activity directed toward specific goals, preference for situations in which personal responsibility is more important than impersonal forces, moderate risk taking, and the desire for immediate feedback on the results of one's actions (McClelland, 1961, Chapter 6). Persuasive as this descriptive fit may be, it required further empirical documentation. Such evidence came from two sources. Using the Alumni records of college students who took the TAT some fifteen years earlier, McClelland (1965) found that almost all (83%) of the alunmi in entrepreneurial roles had high _n_ Ach scores fifteen years earlier. Conversely, few (21%) of the men in non-entrepreneurial roles had high _n_ Ach scores. These are rather remarkable findings considering the comparative lack of longitudinal research in psychology and the typically low predictive power of most psychological tests. Consider the fact that a half hour sampling of thoughts of college students predicted career activity fifteen years later !

Another set of studies documents the association of n Ach with entrepreneurship. The archetype entrepreneur in Greek mythology is Hermes as described in the "Homeric Hymn to Hermes", written around 520 B.C. when Athenian n Ach was high compared with later periods. In this hymn Hermes is described as innovator, inventor, businessman, concerned with getting ahead in the world as fast as possible. He made a fortune by constructing a lyre from a tortoise shell. Hermes was not above trickery. "Born in the morning, in the noonday he performed on the lyre, in the evening he stole the cattle of the archer god Apollo"*. Then Hermes swore to Apollo and Zeus that he, the newborn babe was innocent. "The real point of the story is its realistic reflection of the conflict which was going on between the traditional propertied classes, represented by Apollo, and the neuveaux riches merchant class, who adopted Hermes as their patron. In such a conflict the merchants were clearly the agressors, just as Hermes is, in their demands for a greater share of the wealth and higher social status." (McClelland,1961, p. 303). Hermes makes technological innovations, embodies restless energy, motion, little waste of time, and strives for higher status and greater wealth.

The empirical question is whether these and other aspects of Hermes' life style also are characteristic expressive styles of people with high n Ach. Based on research by Aronson (1958), McClelland concluded that restless (nonrepetitive, discrete) doodles are characteristic of high n Ach individuals. Like Hermes, the winged-foot messenger of the gods and patron of travelers, high n Ach people, and peoples, travel more, more widely, explore further and have higher rates of emigration (McClelland, 1961, pp. 313-317). A variety of data suggest that high n Ach is related to upward social mobility (McClelland, 1961, pp. 317-322; Crockett, 1962). Just as Hermes was a superb athlete, cultures with high levels of n Ach bear a striking resemblance to the character of Hermes, the emtrepreneur. Although interesting as an empirical study of a mythological character type, this research has greatest value in filling out our picture of what a person is like who has high n Ach. It helps suggest why a country with a comparatively large number of high n Ach individuals will tend to develop economically more rapidly.

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*From Hermes, the Thief, N.O. Brown, Madison, Wisc.: University of Wisconsin Press, 1942

THE ORIGINS AND CONSEQUENCES OF ACHIEVEMENT MOTIVATION

An equally important question to answer concerns the factors which encourage the development of n Ach in individuals. There are many approaches to this question. Undoubtedly cultural values, status structure systems, educational processes, peer group interactions and child-rearing practices all influence the development of n Ach. Most is known, however, about the impact of child-rearing practices and cultural values.

Winterbottom studied the parents of thirty middle-class boys aged 8-10 (as reported in McClelland, et al., 1953, pp. 297-304). After determining the strength of n Ach in these boys, Winterbottom examined the child-rearing practices in the parents. She found that the mothers of boys with high achievement motivation (1) tended to set higher standards for their children, (2) expected independence and mastery behavior to occur at an earlier age than did the mothers of boys with low achievement motivation, and (3) more often were affectively rewarding -- i.e., kissing and hugging were common rewards. Additional corroboration for this relationship between child-rearing patterns and levels of children's achievement motivation were obtained in several other studies. Rosen and D'Andrade (1959) studied parents and children in six different American ethnic groups and varying social classes: French-Canadian, Italian, Greek, Negro, Jewish, and "old American Yankee". Despite complex class differences, Rosen and D'Andrade found that self-reliance training promotes high n achievement, provided the training does not reflect generalized authoritarianism or rejection by the parents.

These results were extended in cross-cultural research done by Child, Storm, and Veroff (McClelland , et al., 1953). They reasoned that child-rearing patterns reflected pervasive cultural values. To establish this relationship, Child, et al., collected ethnographic data on child-rearing practices from thirty-three cultures. The measure of cultural values was obtained from an analysis of the folk tales told to children of the thirty-three cultures, since folk tales often are used to convey values to children. Child et al., found that cultures in which there was direct training for achievement also had folk tales with high levels of achievement motivation. On the other hand, cultures which are characterized by rigid or restrictive child-rearing practices (punishing children for failure to be obedient and responsible) have folk tales with relatively low levels of achievement motivation. The research of Child, et al., confirms in large part an earlier study by McClelland and Friedman (1952).

These studies describe an important social-psychological pattern. Certain cultural values are reflected in child-rearing practices which foster high achievement motivation in children. Further, high achievement motivation in a child often crystallizes into an entrepreneurial personality and subsequent career as a manager or administrator. It was at this point in the research that McClelland placed these findings into a larger theoretical context. Weber (1930 edition) had discussed the relationship between the pervasiveness of the Protestant ethic in the rise of capitalism. McClelland suggested a social-psychological interpretation for Weber's hypothesis. The Protestant ethic represented a stress upon independence, self-reliance, and hard work -- the achievement values which McClelland had shown to result eventually in entrepreneurial activity. McClelland reasoned further that increases in these cultural values should herald subsequent increases in economic activity. Potentially this hypothesis provided a psychological explanation for the economic flourishing and decay of nations throughout history.

The research documenting this interpretation of economic history is presented in great detail in McClelland's book, *The Achieving Society.* Only two key studies will be described here. In the first, McClelland compared the economic productivity in 1950 of all the Catholic and Protestand countries in the temperate zone. The average economic productivity of the twelve Protestant countries was compared to the average economic productivity of the thirteen Catholic countries. The measure used to compare economic productivity was the kilowatt hours of electricity consumed per capita. There was a striking difference in favor of the Protestant countries. In the second key study, McClelland obtained measures of the level of achievement motivation in twenty-two countries both in 1925 and in 1950 by counting the frequency of achievement themes in samples of third and fourth grade readers. Three measures of the gain in economic productivity were obtained for the period 1925 to 1950: (1) change in national income as measured in international units per capita (Clark, 1957), (2) change in kilowatt hours per capita of electricity produced, and (3) a combination of the above two measures of change. Levels of achievement motivation in 1925 and 1950 were correlated with the degree of deviation from the expected economic gains.

Correlations of Reader *n* Achievement Scores with Deviations from Expected Economic Gains (Courtesy of D. Van Nostrand Co. Inc., *The Achieving Society*,p. 92)

n Achievement Level by Year	IU/cap 1925-1950 (N=22)	Kwh/cap 1929-1950 (N= 22)	Both Combined (N=21)
1925	.25	.53 (p .01)pd	.46(p .02)pd
1950	-.10	.03	-.08

pd - predicted direction

This table shows that the level of achievement motivation in 1925 predicts the rate of economic development from 1925 to 1950, while the level of achievement motivation in 1950 does not correlate with the rate of economic productivity for the same period. This striking confirmation of McClelland's theory was extended in several subsequent research studies. Levels of achievement motivation were measured in the literature of Spain and England from the 1500's through the 1800's. In both cases, the rise and fall of achievement motivation preceded the rise and fall of economic productivity by about 25 to 50 years. Similar relationships were obtained for achievement motivation levels and economic productivity in Greece from 900 to 100 B.C. and Pre-Incan Peru from about 800 B.C. to 700 A.D., further supporting McClelland's hypothesis (McClelland, 1961, Chapter 4).

SOME PERSPECTIVES ON ACHIEVEMENT MOTIVATION

Although the research on n Ach is impressive in quantity, quantitativeness and ingenuity, it is not the only human motive to be studied and not necessarily the most important one. N Ach was chosen from among over twenty theoretically discrete motives described by Henry Murray (1938). A number of these motives have received systematic attention, especially the need for affiliation (n Aff) and the need for power (n Pow). N Aff, for example, shows rather complex relationships between birth rate, infant mortality rate and also economic development (McClelland, 1961, p. 164). N Power is not related to the rate of economic growth. However, if n Pow is relatively high in a country, while n Aff is relatively low, that country tends to be predisposed to an authoritarian regime. McClelland obtained comparative figures on n Aff and n Pow in 1925 and 1950 for a total of 63 cases. (Since most countries were measured both in 1950 and 1925, the actual number of countries is about half the total number od cases). Of the 12 examples of ruthless police states in the sample, all but one were above the mean in n Pow and below the mean in n Aff (McClelland, 1961, p. 168). In 1950, the United States was relatively high in n Pow. It is comforting to know that n Aff was also quite high in 1950, thus mitigating against the ruthless use of power. From the point of view of this chapter, the important thing to realize is that high n Ach, n Aff or n Pow does not make a man, or country, better or worse than others. And, more important than any one motive alone is the configuration of motive strengths.

A second important fact to understand is that we have been discussing "operant" n Ach, not "respondent" n Ach. Operant behavior tends to occur even when the situational cues or demands for it are relatively weak. Respondent behavior requires stronger situational cues and demands before it is elicited. Most people, whose operant n Ach behavior is relatively weak, nevertheless can respond appropriately and effectively when the situation calls for achievement oriented behavior. The crucial difference for people with strong operant n Ach is that they more actively seek out entrepreneurial situations, and where the situation allows for a variety of appropriate responses, they are more likely to act in an achievement oriented way. McClelland argues that the level of operant n Ach in a country makes a significant impact on the rate of economic growth or decline.

Third, the explanation of economic growth presented by McClelland is plausible,substantiated empirically in large measure; but, in itself, it is not the complete answer to the riddles of why some countries develop their economies more rapidly. For example, the description of child-rearing practices conducive to the development of n Ach is a bare bones delineation. The exact nature and impact of schooling on n Ach has never received detailed extensive treatment empirically. Similarly, the function of peer group interaction in the early school years, the influence of industrial recruitment and management practices, and the impact of the social structure status systems, are important in developing achievement motivation. Yet less attention has been given to these influences.* In short, probably there is as much not known about n Ach, its origins and impact, as what is known. Nevertheless, in this era where practical social problems demand solutions before the final answers are known, it seemed worthwhile to search for methods of increasing n Ach.

INCREASING ADULT ACHIEVEMENT MOTIVATION

In the final chapter of *The Achieving Society*, McClelland summarized the voluminous n Ach research in terms of several recommendations for accelerating a country's rate of economic development. Although true to the supporting empirical research, these suggestions were both utopian, requiring nothing less than breaking the culture's orientation to tradition, increasing other-directedness and market morality, decreasing father dominance, fostering feminist movements, encouraging new religious movements similar to the Protestant Reformation, increasing achievement themes in popular cultural literature, and providing for a more efficient

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*For a more elaborate critique of this point the reader is referred to the last section of Roger Brown's chapter on n-Ach in his book *Social Psychology*, chapter 9. In general, the two best summaries of the research on n Ach are Roger Brown's chapter, just cited, and Heckhausen's book, *Anatomy of Achievement Motivation*.

allocation and use of existing n Ach resources. These suggestions could be considered hypotheses subject to empirical test in a "social environment". At the very least, this would require two countries, only one of which would benefit from the implementation of these national policy goals. At the end of the experiment the psychologist-social reformer would compare national economic statistics of the two countries to see if the policies worked. McClelland realized this was impractical, as well as the fact that prediction and control are the two ultimate criteria for a theory's validity. By the second criterion, his theory had not been tested. Thus, McClelland reformulated the problem as follows: national economic statistics reflect the combined efforts of, among many factors, individual entrepreneurs. If the n Ach of individual men can be increased, there should be a resultant increase in their success and accomplishments as entrepreneurs. This is a more manageable problem, the problem to which McClelland and co-workers have addressed themselves in the last several years.

Increasing adult achievement motivation means, first instilling the spirit of Hermes, teaching men to be more often concerned with excellence and to adopt achievement related action strategies in pursuing their goals. All of these elements of achievement motivation are well specified, thus making the task a straightforward teaching problem. Manageable as this may sound, there is very little evidence in the professional literature indicating that motivation can be increased, especially in adults. The prevailing pessimism is strong. Most psychologists believe that to be even minimally successful requires tremendous effort over a long period of time. In fact this pessimism extends to practically all traditional methods of changing personality. Many psychoanalysts believe that character is formed by the age of five and remains substantially unchanged thereafter. Empirical research on motivation,including n Ach, shows that ordinarily it is relatively stable over a number of years (Skolnik, 1966, Birney, 1959, Moss & Kagan, 1961); almost all forms of psychotherapy are equally ineffective for adults (Eyesenck, 1961), and for children (Levitt, 1957). These studies show that 60-70% get better even if they are not treated. This is equally true for counseling and tutorial programs (e.g., Cambridge-Somerville Youth Project; see McCord, 1964). Bergin (1966), in his review of studies even showed that psychotherapy makes a significant number of people worse. When pooled with those who improve the average is about the same as untreated groups.

The possiblity of changing personality, or of increasing motivation is not a dead issue. Within the field of psychotherapy there is evidence that "behavior modification therapy" is comparatively more effective (Wolpe, 1958). This approach to change argues that all behavior is learned, that symptons can be unlearned and other healthier behaviors learned, or taught (Bandura & Walters, 1963; Wolpe, 1952). Contrary to most other forms of psychotherapy, Behavior Modification attempts to change very specifically defined symptoms, not the total personality pattern, using highly systematic procedures. Psychoanalysts have argued that this approach is superficial and that the removal of symptons without curing the "causes" will lead to new symptons that take the place of the old ones. However, Baker (1966) demonstrated in a study of Behavior Modification Therapy for bed wetters that the technique was relatively effective, that there was not a substitution of symptons and, in addition, that other traits not related to bed wetting also seemed to improve. Perhaps the most interesting aspect of Behavioral Modification Therapy is its new strategy for change. In each individual case the goals are objective, limited and measurable aspects of behavior. For any given goal several systematic relearning procedures are used (Wolpe & Lazarus, 1967). In a review of compensatory programs Jensen (1968) shows that the most effective programs have limited and specific objectives and use systematic plans for reaching those objectives.

McClelland's strategy for change is similar. Many methods are systematically used to increase the salience and frequency of specific n Ach thoughts and actions. It is assumed that every individual has within his repertoire a number of different thought patterns and goals. Men differ in the salience or hierarchy of these motives within them. The motives highest in the hierarchy occur most often and are associated with the greatest number of situational cues. In this sense they are the strongest operant motives. The aim of n Ach courses is to raise achievement motivation within the existing hierarchy by increasing the number of situational cues to which it is tied.

> If one thinks of a motive as an associative network, it is easier to imagine how one might go about changing it. The problem becomes one of moving its position up on the hierarchy by increasing its salience compared to other clusters. It should be possible to accomplish this end by such tactics as: (a) setting up the network - discovering what associations, for example, exist in the achievement area and then extending, strengthening, or otherwise "improving" the network they form; (b) conceptualizing the network - forming a clear and conscious construct that labels the network; (c) tying the network to as many cues as possible in everyday life, especially those preceding and following action, to insure that the network will be regularly rearoused once formed; and (d) working out the relation of the network to superordinate associative clusters, like the self-concept, so that these dominant schemata do not block the train of achievement thoughts - for example, through a chain of interfering associations (e.g., "I am not really the achieving type"). (McClelland & Winter, 1969, p. 43).

Stated in this way, increasing achievement motivation is more like strengthening a weak muscle than redoing a person's childhood.

In order to maximize the chances of increasing n Ach, McClelland decided to be eclectic, using any and all procedures for change that had some impact in the literature on personality change, and systematic in the use of these procedures to increase achievement motivation. Four areas of research and theory were surveyed to identify useful techniques: animal learning research, human learning experiments, experience with different types of psychotherapy, and the attitude change research literature. From these areas McClelland identified four basic types of inputs that should increase the probability of yielding higher levels of operant achievement motivation.

A. The Achievement Syndrome

Increasing achievement motivation in the most literal sense means: (1) clarifying and labeling the cluster of achievement thoughts by teaching the elements of achievement planning; (2) relating these thoughts to the appropriate expressive style (moderate risk taking, initiative, using concrete feedback, planning ahead carefully, etc.); and (3) tying these thoughts and actions to appropriate life contexts (e.g., entrepreneurial type situations). To the degree that this syndrome is clarified, made salient, sensible, and relevant, the motive will be strengthened.*

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*McClelland & Winter, 1969, Chapter 2, cite extensive supporting evidences and spell out these propositions in somewhat greater detail as follows:

A1. The more thoroughly an individual develops and clearly conceptualizes the associative network defining a motive, the more likely he is to develop the motive.

A2. The more an individual can link the newly developed associative network to related actions the more the change in both thought and action is likely to occur and endure.

A3. The more an individual can link a newly conceptualized association - action complex (or motive) to events in his everyday life, the more likely the motive complex is to influence his thoughts and actions outside the training experience.

There are numerous specific procedures for accomplishing these course goals.* Participants can be taught to score their own TAT stories, and subsequently to code their own spontaneous thoughts as well as television programs, newspaper editorials, folk tales, religious books and conversations. The critical task is to clearly conceptualize and label n Ach thoughts so that they will be difficult to forget. The expressive style is taught through game simulations in which the actions are adaptive and valuable. Participants learn, practice and see the results of acting this way in situations where the real life consequences are not severe enough to prohibit experimentation-learning. Group discussions help clarify how and why these actions are natural outgrowths of the achievement thought pattern. Through the analysis of case studies, lectures by successful men, and discussions of the student's own life situation, the ideas and actions are tied to real life contexts. Other methods of teaching are used as well: video tapes, programmed text units, tape-slide units, movies, etc.

S. Self Study

No change in life style or pattern of thought is without problems and conflicts. Inevitably the adoption of increased achievement thinking and actions raises other issues regarding ideals, values, and ethics. These too are considered in achievement motivation courses to make the change satisfying and integrated. More specifically, course participants are encouraged to consider: (1) to what degree achievement motivation meets the demands of reality in an increasingly specialized and professional world; (2) how the spirit of Hermes fits with their image of who they are and what kind of person they would like to be; and (3) in what ways the values of achievement fit with their dominant cultural values*. These issues can be raised in a variety of ways, but typically have included periods of meditation, group discussions of self images and ideals, discussions of cultural values as expressed in religious books and folklore, and discussion of research showing the relationship of achievement motivation to economic development. The role of the trainer during these discussions is that of an informed but impartial resource who is committed more to careful consideration than to convincing and persuading. Often this results in some individual counseling. At other times the trainer simply is silent or a good listener. Implicit in this examination is an open choice. Participants are free to choose not to strengthen their achievement motivation. The aim is to promote a highly informed, well considered choice.

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*The description of course inputs in relatively brief here because they are described extensively elsewhere, i.e., McClelland and Winter, 1969, Chapters 2 and 5. Also, a full-length book-manual has been written to describe achievement motivation training and how to teach yourself to become a course trainer. Teaching Achievement Motivation, Alschuler, Tabor, & McIntyre, Middletown, Conn.: Educational Ventures, Inc., 1970. This book is accompanied by sets of curriculum materials that operationalize the theoretical course inputs, i.e., Ten Thoughts, The Origami Game, The Ring Toss Game, Who Am I, Aiming, by Alschuler and Tabor. Three additional sets will be published soon: Achieving: case studies, The N Ach Match Game, and The Darts-Dice Game.

G. Goal Setting

What differentiates achievement motivation from power motivation and affiliation motivation or any other motive is first and foremost the nature of the goal: striving for excellence as opposed to influence or friendship. A man may be in business, may be taking initiative, using feedback, etc., and still be more concerned with having friends than improving his business. A politician may see influence as the means to attaining needed reforms which promote various kinds of excellence. In every case the goals define the motive. The training courses encourage achievement goal setting in three major ways. Before the course proper begins, participants are told about achievement motivation, the impressive research findings, the results of previous courses, the experiences of successful entrepreneurs and the convictions of prestigious academicians associated with well-known universities. (1) Every attempt is made before the course begins to develop the belief in participants that they can and will increase their concern with excellence. To the degree that a man believes something is possible and desirable, he will make it happen.

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*From McClelland & Winter, 1969:

S1. The more an individual perceives that developing a motive is required by the demands of his career and life situation, the more educational attempts designed to develop that motive are likely to succeed.

S2. The more an individual can perceive and experience the newly conceptualized motive as consistent with the ideal self image, the more the motive is likely to influence his future thoughts and actions.

S3. The more an individual can perceive and experience the newly conceptualized motive as consistent with prevailing cultural values and norms, the more the motive is likely to influence his future thoughts and actions.

The culmination of the course also focuses on goal setting in two additional ways. (2) Participants are encouraged to examine their life and to formulate an achievement goal to which they publicly commit themselves within the group. In this way participants concretize their goals and obligate themselves to obtaining regular, careful specific measures of their progress. (3) This record keeping provides concrete feedback, reinforcement, a way of locating blocks and solutions, and in general, an opportunity to engage in continued planning. The precise goals always are chosen by the participants in order to keep the goals individually relevant.*

I. Interpersonal

As described thus far, the training course may seem highly rational. Emphasis has been placed on clear cognitive labeling, articulation of action strategies, understanding the research, analysis of related larger issues, goal setting and record keeping. Obviously, humans are not simply thinking machines into which a new "computer program" can be inserted. Achievement motivation also is the excitement of challenge, the joy of working hard for a goal, often the frenzy of trying to meet a deadline, the pride in innovating, the fear of failure and disappointment at not succeeding. Through the game simulations, course participants have an opportunity to experience and consider their emotional responses to achievement situations. Yet, in another way, achievement motivation courses provide an emotional climate which allows for change. (1) Usually, the courses are held in retreat settings which take the participants away from the daily pressures and demands of work, family and friends. Besides fostering a feeling of unusual privilege, it allows time for serious emotional self confrontation. (2) The other group members, all of whom share this unique experience, begin to form a new group identity with new ties of friendship and feeling which last beyond the brief course. The new reference group can act as a continued stimulus to and reinforcement of what was learned during the course. (3) One of the key functions of the trainer is to encourage this group formation, not as its leader, but as a catalyst. The trainers style is "non-directive", open, warm and accepting, consistent with the posture of client-centered therapists. This, too, allows participants to[*] fact increasingly deeper emotional issures raised by the course.

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*From McClelland & Winter, 1969:

G1. The more reasons an individual has to believe that he can, will, or should develop a motive, the more educational attempts designed to develop that motive are likely to succeed.

G2. The more an individual commits himself to achieving concrete goals in life related to the newly formed motive, the more the motive is likely to influence his future thoughts and actions.

G3. The more an individual keeps a record of his progress, toward achieving goals to which he is committed, the more the newly formed motive is likely to influence his future thoughts and actions.

Conducting an achievement motivation course requires more than simply exposing participants to sets of educational inputs. The inputs need to be systematically organized and the training group, as a small social system, needs to be managed. To provide this perspective, McClelland and Winter draw upon Parsons' analysis of the functional imperative of a social system.

Table 3.1

The Functional Imperatives of a Social System, after Parsons[*+]
(cf. Black, 1961, p. 331)

	Instrumental Activities	Consummatory States
Task performance (external orientation)	Adaptation (technology) [Achievement Syndrome -A]	Goal Attainment [Goals of business expansion-G]
System maintenance (internal orientation)	Pattern Maintenance (norms, tension management) [Self Study -S]	Integration (System Survival) [Interpersonal Supports]

[*] McClelland & Winter, 1969, p. 359

[+] Course inputs are in brackets.

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[*] From McClelland & Winter, 1961, Chapter 2.

I1. Changes in motives are more likely to occur in an interpersonal atmosphere in which the individual feels warmly but honestly supported by others as a person capable of guiding and directing his own future behavior.

I2. Changes in motives are more likely to occur the more the setting dramatizes the importance of self study and lifts it out of the routine of everyday life, thereby creating an in-group feeling among the participants.

I3. Changes in motives are more likely to occur and persist if the new motive is a sign of membership in a new and continuing reference group.

> He (Parsons) argues that it is possible to distinguish two main functions of any social system -- one oriented outwards toward the environment, which he labels task performance; and the other oriented inwards, which he labels system maintenance. The goals and means of attaining each differ. Thus, a psychological experiment such as the achievement motivation training course has two distinct aspects. The task performance aspect is to expose businessmen to certain psychological inputs with the goal of changing their business behavior. However, for this task to be performed, a system maintenance goal must also be achieved, that is, the course as a social system must survive... The achievement syndrome (A) is the technique by which the goals of business expansion set by the participants (G) are to be achieved. These two classes of educational inputs relate to the task to be performed as a result of the creation of this miniature social system. On the other hand, the Self Study (S) educational inputs seem designed to help the person manage the tensions and value changes within himself and his relations to others, which are likely to result from pursuing the task performance goal. Similarly, the interpersonal supports (I) educational inputs seem designed to fulfill the requirement for integration either within the personality as a system or within the society to which the individual returns." McClelland & Winter, 1969, pp. 359-360.

Of the four sets of training inputs only the Achievement Syndrome (A) is unique to the training program. In other words, although the research was designed originally to test the causal relationship between achievement motivation and entrepreneurial behavior, the questions answered should generalize to other types of Psychological Education as well: Can the motivation of adults be increased ? What are the relationships between the four training inputs and specific course yields ? What type of people benefit most from motivation training?

THE RESULTS OF ACHIEVEMENT MOTIVATION TRAINING FOR ADULTS

Seventy six men in Kakinoda and Vellore, India comprised the basic sample of businessmen who were given achievement motivation training and were studied by McClelland and Winter. These men were compared to matched controls in Vellore and Rajahmundig, India, a town similar to Kakinoda. The basic data on change was obtained through a series of intensive interviews given over a two-year period following the training. A four point "Business Activity Code" was developed to assess the degree of change: -1 for demotion, firing, fewer responsibilities, less pay, etc.; 0 for an impasse, business improvement not due to the person's efforts, routine job advancement, improvement in family life; +1 for specific plans to improve his business and some action taken; +2 for unusual increase in the firm's business due to the person's activity, salary increases more than 25%, etc. (p. 81). By this measure, the training programs were reasonably effective.

Table 3.2

Percentages of Entrepreneurs Classified as Active (+2) During Two-Year Periods

	Before the course 1962-64	After the course 1964-66
All trained in _n_ Ach (n=76)	18%	51%
All controls (n=73)	22%	25%

$x^2 = 18.91; p < .001$

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*Adapted from McClelland & Winter, 1969, p. 213

Beyond this increased entrepreneurial activity there are more specific indices of their new energy.

> They work longer hours. They make more definite attempts to start new business ventures, and they actually start more such ventures. They make more specific investments in new, fixed productive capital. They employ more workers. Finally, they tend to have relatively larger percentage increases in the gross income of their firms. The aggregate effects of the courses include, to date, the mobilization of approximately R_s, 376,000 of specific new capital investments and about 135 new jobs. Measures by these figures, the courses certainly seem to have had an economic effect. McClelland & Winter, 1969, pp. 230-231.

However, not all businessmen benefit from the course. Almost half of the men (49%) were not unusually active in the two years following the training. A careful comparison of the "changer" and "inactive" men showed that they were systematically different before the course. 92% of the changers (n = 27) were "in charge" of their business or the decision maker in their extended family while, among the inactives (n = 34), only 50% were in charge in either situation. ($x^2 = 12.00$, $p < .001$). Besides being "in charge", the changers tend to have a different view of themselves:

> Achievement motivation training is especially likely to change men who are in charge of their businesses, probably because they have the scope and independence to carry out new ideas and plans. Furthermore, if a man already is somewhat dissatisfied with himself, but sees himself as someone who can initiate specific action to solve specific problems, he is likely to respond to the training with specific visible activity." McClelland & Winter, 1969, p. 272.

Perhaps the most striking psychological difference in the "changes" produced by the training is revealed in their TAT stories in the two years following the course. These stories contain increased references to activity rather than essence-goals, to taking initiative rather than relying on external resources, to solving problems rather than avoiding them, or more generally, a syndrome that can be described as more efficacious thinging.

Not every course was equally effective in influencing the participants to change. By comparing the effects on men "in charge" of courses with differing numbers and types of inputs, it was possible to roughly gauge the value of various inputs. The comparison suggests that no one input is either necessary or sufficient to produce change. However, when training is viewed as the establishing of an effective social system, the results are clearer.

> At least some minimal level of course inputs relevant to each of the four functional inperatives is necessary to achieve effectiveness... Intensive attention given to two or three of the four prerequisites is not likely to be as effective as some attention to all of them. At a minimum, we are convinced by our experience that exclusive attention to task performance without any attention to system maintenance is likely to result in complete failure of the enterprise. ibid, p. 360.

In fact, the "system maintenance" issues were less well resolved by the course than the "task performance" issues. For the men not "in charge" the course message -- to think and act more efficaciously -- did not fit. They were not as dissatisfied with the way they were to begin with, and they had fewer opportunities to exercise the problem-solving, achievement orientation taught in the course.

In perspective, nevertheless, McClelland and Winter did show that adult motivation can be increased when the training is an effectively managed social system. This entails the integration of the task with the personality of the participants and with the demands and opportunities in participants' lives. Only under these conditions will motivation aroused in the training program be maintained.

Consider for a moment one implication of these results. The United States is engaged in enormous foreign aid programs including the shipment abroad of dollars, equipment, food stuffs and Peace Corps Volunteers. A major assumption behind this aid is that increased opportunities will foster more rapid economic progress. Achievement motivation training represents a radical alternative. The investment is made in men instead of materials, in motivation rather than in opportunities. This type of aid would be focused on key individuals, and thus be relatively inexpensive compared to programs which attempt to feed an entire nation.

MOTIVATING ADOLESCENT ACHIEVEMENT

Aid to education, like foreign aid has been invested primarily in the external, material side of teaching and learning -- newer school buildings, newer curricula, better equipment. One central aim is to create equal educational opportunity for all citizens. Yet, Coleman (1966) in his nationwide study of educational opportunity concluded that certain student attitudes accounted for more variance in the amount of learning than teacher training, physical facilities or curricula combined. The key attitudes were students' self concept and the degree to which they believed they could control their own destiny through their efforts. Students who believed that fate, chance and luck were more important than hard work did less well. Lefcourt (1966) reviewed the research on this attitudinal variable and concluded that we know very little about its social origins or how to increase it through training. The aims and outcomes of achievement motivation training are temptingly close to this crucial desire to master one's destiny. The restless striving for excellence, self confidence, calculated risk taking and desire to have personal responsibility for what happens are central to achievement motivation and also, perhaps to a sense of "fate control".

Beyond this similarity, there is also empirical data showing that n Ach is related to how well a person does in school. McClelland (1953) found a significant relationship between n Ach and school grades of college students. Other researchers have found small, but statistically significant relationships between n Ach and academic performance of superior high school students (Uhlinger & Stephens, 1960). "Underachievers" on the other hand, appear to have very low achievement motivation (Burgess, 1956; Garrett, 1949; Gebhart & Hoyt, 1958). Morgan (in Atkinson & Feather, 1966) showed that in equal ability grouped classrooms, n Ach was strongly related to grades attained. For these practical and socially meaningful reasons, it seemed appropriate to see if adolescents' achievement motivation could be increased.

The first Achievement Motivation training course for high school students was given to bright, underachieving boys enrolled in an intensive remedial summer school program at Brown University (Kolb, 1965). Twenty of the 57 boys in the summer program were chosen randomly to receive the additional motivational training. The remaining 37 boys served as the control group. The results of the training are summarized below:

1. At the end of the summer there were no significant differences in change between the two groups in summer school grades, Stanford Achievement Test scores or level of anxiety, as measured by the Taylor Manifest Anxiety Scale, and the Mandler-Serason Test anxiety scale.

2. Subsequent Change in School Grades

Mean Change in Total Grade Point Average

	Experimental Group	Control Group	p[b]
6 months after the course	+6.3 (N = 18)[a]	+4.1 (N = 31)	N.S.
18 months after the course	+7.1 (N = 12)	+2.1 (N = 24)	.05

a) data presented on all those for whom it was available at time of assessment.
b) Man Whitney U-Test, one tailed probability

3. When the experimental and control groups were subdivided further into those of high and low socioeconomic status (SES), Kolb found that high SES experimental group boys gained 12 points in grade point average ($p < .05$) in the 18 months following the course. Low SES experimental and both high and low SES control boys had slight, but non-significantly higher grades at the end of 18 months.

Kolb demonstrated that adolescent striving for excellence could be increased for relatively long periods of time. However, his research raised a number of other practical questions. The effects of the training were most pronounced for high SES boys who, Kolb hypothesized, returned to environments that supported and encouraged the achievement values they had earned. Although this is plausible, it is also possible that low SES boys simply did not find school the best arena for them to exercise their increased motivation. They may have become more entrepreneurial outside and after school where they are more "in charge". It is possible that different types of students use the training in different ways. Older students may apply their achievement motivation in different ways than younger students. Girls may use n Ach in different areas than boys. These questions simply are extensions of those asked by McClelland and Winter: What are the yields of achievement motivation training? For whom is the training most effective?

At a theoretical level there is an important question raised but left unanswered by McClelland and Winter. Their data indicate that the courses were more effective in reaching the "task performance" goals than in resolving the "system maintenance" issues. At an individual level this means finding additional ways of managing tension, reducing intra- and inter-personal conflicts, setting new norms and facilitating the integration of the new motive into the person's life. At an institutional level, (or large group) increasing system maintenance means finding more methods of reducing the conflict between an individual's achievement motivation and the situational press for other motives e.g., compliance, obedience, etc.It means devising ways of introducing achievement motivation training into schools so that this type of Psychological Education will be integrated into the system and both will survive. Much of the current efforts to increase innovation in education have succeeded initially in reaching their goal, only to find that the resultant conflicts set up in the school subvert the progress made. We need new strategies for increasing the life span of educational innovations. How to improve system maintenance is the basic question addressed by this research.

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Chapter 4

How to Increase Motivation Through Climate and Structure

by

Alfred S. Alschuler

When Kurt Lewin left Nazi Germany in the 1930's he had an established reputation as a "field theorist." Lewin and other field theorists believe that behavior is almost solely determined by stimuli in the environment. These field forces are so strong that individual personality differences play a relatively small role in shaping behavior. To demonstrate this belief, and simultaneously to help explain German compliance to Hitler's regime, Lewin, Lippitt and White (1939) created three boys' clubs, each with a different type of leader. The "autocratic" leader was stiff, formal, aloof, gave directions, made rules and did not participate in the boys' activities. The "laissez faire" leader was informal, friendly, gave no directions, made no rules and, in general, shared in whatever the boys wanted to do. The "democratic" leader was task oriented, helped the boys vote on what they wanted to do. He did not direct actions like the autocratic leader, nor did he let happy chaos emerge as did the laisse faire leader. He was a friendly co-participant in the tasks chosen by the boys.

Over time the three groups developed distinctly different social climates and behavior patterns. There were many more aggressive acts and scapegoating in the autocratic group. The boys were task involved and compliant, but only as long as the leader was present. When he left, anarchy quickly emerged. In contrast, when the democratic leader left his group, the boys continued their purposeful activities and group morale and cooperation remained high. In the laissez faire group the absence of the leader meant even more fun, and even less task involvement. Friendliness and "we-feeling" remained high. After the three social climates were established for some time, the leaders switched groups. In this way it was possible to assess how much the club climate was due to the leader and how much due to the personalities of the boys. Lippitt and White (1958) concluded that in nearly all cases the social climate, rather than the personalities of the boys, was the principal determinant of behavior. When leaders changed, the climate and behavior changed.

This research study was extreme in several ways. The differences in climate were so striking that the statistical representations of these differences, though also striking, seem pale reflections of what happened. Psychological research seldom overwhelms one with such socially significant differences. The study also was extreme in the value-laden vocabulary used to describe the research e.g., scapegoating, autocratic, anarchy. Lewin must have been deeply impressed by the differences between the governing of Nazi Germany and the U.S. Yet, assessing three boys' clubs as if they were three nations is a large intellectual leap. In a film portraying this research the commentary sounds more like war propaganda than science.* It is very difficult to see anything good in a "Nazi" boys' club. Nevertheless, we do not condemn classrooms when they conform rather closely to the "autocratic"social climate as described by Lewin. There must be some advantages to such a learning climate for it to be so widespread and to have lasted so long. Perhaps different labels for the climates would make the advantages and disadvantages clearer.

Finally, the assumptions on which the research was based are extreme. At the time the research was conducted orthodox Freudians were claiming that all behavior was determined by subconscious factors. The environment, from this point of view, was simply an empty stage on which individuals unknowingly acted out scripts, written when they were children. The two theories were on a direct intellectual collision course. Both, in fact, have been modified subsequently. Neo-Freudians have argued, contrary to Freud, that the conscious mind and environment are more important than Freud claimed. Social psychologists have been more explicit in stating how personality and environment factors interact to produce specific behavior. Attempts to change behavior have concentrated both on altering internal states (e.g., achievement motivation training, psychoanalysis) and altering external conditions.

It is a fortuitous coincidence that Lewin's three climates illustrate the three motives most thoroughly studied by McClelland and co-workers: n Power, n Ach, and n Affiliation. Although the connection is intuitively obvious, descriptions of n Power and n Affiliation climates may help clarify the impact of the climates on the thoughts, feelings and actions of the boys clubs' participants. Individuals who have a strong need for power are concerned with influencing others and in gaining the means to influence. This goal dominates their thought patterns and can be measured through the TAT, in the same way as n Ach is measured. Such men seek leadership positions, often in industry, government or teaching where, by giving opinions, suggestions or orders, they can influence others. They tend to be seen by others as forceful outgoing, hard-hearted and demanding. It is less obvious that a high n Power leader forces compliance on his followers, which is a measure and guarantee of the leader's status. Whether such men are ruthless or benevolent depends not so much on n Power per se, but on the strength of other motives associated with their power concerns. If n Affiliation also is high, they tend to be benevolent. If n Aff is low, they are less concerned about the feelings of others and have a tendency to ride roughshod over opposition. Individuals with strong affiliation motivation are concerned with establishing, maintaining or restoring friendly, warm relationships. These concerns are reflected in compassionate acts, in attempts to mediate, or in relaxed convivial activity. Such people are less concerned with reaching a goal or attaining influence and are more concerned with immediate warm relationships. Men in supervisory jobs, psychotherapists, ministers and women more often than men have strong needs for affiliation.

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*The reader may see these climates on the film, "Three Experiments in Social Climates".

The effect of leaders' power and achievement motivation on subordinates is well illustrated by Andrew's study of two business companies in Mexico (1967). The presidents of both companies had high power motivation. However, in one president n Power was combined with moderately high n Ach and a commitment to achievement values. This president fostered high n Ach in his immediate subordinates. The other president had authoritarian values, low n Ach and compliant subordinates. The effects on employees were clearly different. The first company was a thriving dynamic organization. The second company showed little growth, had high turnover rates, low morale and dissatisfaction among workers. The second company's president made most decisions himself and left little room for individual responsibility. The similarity to Lewin's boys' clubs is obvious. From this point of view, we would say today that Lewin's autocratic leader was high in n Power, second highest in n Ach and very low in n Aff. The democratic leader was high in n Ach and n Aff, but low in n Power. The laissez faire leader was low in n Ach and n Power, but very high in n Aff. Most teachers who have high n Power also have relatively high n Aff, contrary to Lewin's autocratic leader. Thus their classrooms are both efficient and less ruthless than pure autocratic groups.

MOTIVATIONAL CLASSROOM CLIMATES

The theory and research of John Atkinson (1964, 1966) combines the Lewinian emphasis on situational determinants of behavior and the elegance of the personality research on motivation. According to Atkinson the Tendency to strive for a specific goal (T) is the result of the strength of the person's Motive (M) and two other situational variables: the expected Probability of goal attainment (P) and the Incentive value of success (I).

$$[T = M \times P \times I]$$

Both P and I are aspects of each specific field situation. Starting from Atkinson's work, George Litwin (1966) has described these situational variables (P and I) in terms of social climate.

> Organizational Climate is a term to describe and summarize the patterns of expectations and incentive values that impinge on and are created by a group of people that live or work together. Organizational Climate is assumed here to be a property of work environments that can be perceived directly or indirectly by the people who live and work in these environments.
>
> Climates determine motivation and motivated behavior by subtly or blatently defining the "rights" and "wrongs" for each member of the organization. It is the climate of the group that leads different individuals to expect different kinds of rewards or punishments for various kinds of behavior...Organizational climate molds and shapes the motivation and behavior of every member of a work group through its effect on each member's perception of what is expected of him, and what he will "get" for doing a job a particular way. (Litwin, 1966).

Litwin and Stringer (1966) have identified six dimensions of climate, based on their own, and previous research. Variations along these dimensions determine what motives will be aroused. They describe these dimensions for business organizations, but it is clear that the dimensions are relevant to practically any organization, including schools and classrooms.

Six Dimentions of Organizational Climate*

1. Structure - the feeling the workers have about the constraints in their work situation; how many rules, regulations, and procedures there are. Is there an emphasis on "red tape" and "going through channels?"

2. Individual Responsibility - the feeling of "being your own boss"; not having to double-check all of your decisions. When you have a job to do, is it really your job?

3. Rewards - the feeling of being rewarded for a job well done. How fair is the pay and the incentive? How honest and fair are the managers when it comes to praising workers who are doing a good job? How fair are the punishments, and do they mean anything?

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*From Litwin, 1966.

4. Risk and Risk-Taking - the sense of riskiness and challenge in the job and in the work situation. Are you encouraged to take calculated risks, or is "playing it safe" the best way to operate?

5. Warmth and Support - the feeling of general "good fellowship" and helpfulness that prevails in the atmosphere. Is it important to be well liked? Are employees encouraged to cooperate and be helpful?

6. Tolerance for Conflict - the feeling that management isn't afraid of different opinions, or conflict; the emphasis placed on "getting along" versus settling differences here and now. Are you encouraged to smooth over or confront conflict?

In order to get a better feel for how these dimensions vary to produce different motivational climates in classrooms the following summary table has been prepared.

Table 4.1
Three Motivation Climates in Classrooms

Climate Dimensions	n Power	n Affiliation	n Achievement
Degree of Structure	Many rules and regulations define specific behavior desired. Conformity is required.	Few rules and regulations. Informality and spontaneity are valued.	Rules designed to focus on high performance goals. Within the structure, the individual is free to set his own goals and to act with initiative to attain them.
Emphasis on Individual Responsibility	Individual responsibility is discouraged. Permission from the teacher is always required.	Individual responsibility is highly encouraged for setting goals and initiating action. No constraints are placed on the person by rules or the teacher.	Individual responsibility is encouraged, but within the broad limits defined by the rules, not by the teacher.
Risk taking	Risk taking is discouraged. The way to do well is to play safe, to do what is required.	Few sanctions against failure, thus risk taking is encouraged and often is unrealistic.	Moderate risk taking based on feedback from previous performance is encouraged.
Warmth and Support	The teacher is cool, distant and formal. All students are treated alike. Interaction between students is discouraged.	The teacher tries to understand each student and to become friends with each one. Friendship among students is encouraged.	The teacher relates warmly to all students, but in the context of working on tasks. The task is more important than friendship.
Emphasis on Rewards vs. Punishment	Rewards and punishments are emphasized equally and are based on what the teacher considers fair.	Rewards are frequent; punishments infrequent. Often rewards are given independent of the quality of performance.	Rewards are emphasized over punishments, but they are contingent on good performance.
Tolerance for Conflict	Conflicts and arguments are resolved by degree. The teacher is right. Students comply.	Conflicts and disagreements are explored and smoothed over in order to re-establish friendly relationships.	Conflicts and disagreements are confronted when they are related to, or interfere with, learning.

These thumbnail sketches describe pure types of classroom climate. Probably the most frequently occurring classroom climate is a mixture that emphasizes power motivation most, fused with achievement motivation, and with least emphasis on affiliation motivation.* Many factors contribute to the creation of a classroom or organizational climate: Leadership style, physical work environment, "traditions", formal rules. If students' motivation is to be increased, these factors must be carefully controlled. Controlling these factors requires a more thorough knowledge of how they contribute to classroom climate. In the remainder of this paper, the influence of explicit and implicit rules will be examined.

MOTIVATIONAL CLASSROOM STRUCTURES

The U.S. Government, industry, and schools are making increased use of games as a method of teaching complex subject matter from the art of diplomacy to vocational decision making.** In playing these educational games, constructed to simulate life situations, participants face dilemmas and choices which are more analogous to actual situations than in other didactic procedures.Proponents of learning through games say that such activity provides vicarious experience and increases a player's sense of efficacy (Boocock,1966). However, in a review of the studies comparing learning through simultions versus other methods of learning comes to the following conclusion:

> Without exception no evidence was uncovered supporting the contention that participants learn more facts or principles than they would by studying in a more conventional manner. Cherryholmes, 1966, p. 5.

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* For a more complete description of this typical climate, the reader is referred to "Students' Achievement Motivation Can Be Developed", AMDP Working Paper #7.

** For a closer look at this new development in teaching, the reader is referred to the following articles listed by author in the Bibliography: Bensen (1962), Bloomfield & Padleford (1959), Boocock (1963), Boocock & Coleman (1966), Coleman (1966), Cherryholmes (1963), Greenlaw, Herron & Rawdon (1962), Guetzkow (1959), Guetskow et al. (1963), Kibbe, Croft & Nanus (1961), Robinson (1965), Robinson et al. (1966), Sprawls (1962), Thorelli & Graves (1964).

Cherryholmes also concludes that in every study there was striking evidence for increased student interest, involvement and motivation. At a general level this is not surprising. The shared expectations and incentives (climate) are created as much by the structure of the situation as by the teacher's style. Games have an exceptionally clear, defined structure via the rules. Perhaps this extreme clarity increased motivation more efficiently in the contrast to "Life" and"Learning", where the rules are less clear. Still, many questions remain unanswered. What motives are increased? What kind of rules increase which motives? How can a knowledge of motivational games be applied to the classroom more systematically? Can the classroom itself be structured as a game? How do different classroom game structures promote different motivational climates? The model presented below outlines a diagnostic scheme for determining the motivational impact of different types of games. The model only focuses on how to diagnose achievement, affiliation and power games.

1. Games and Non-Games

Four characteristics distinguish a game from other forms of activity: (1) the rules which govern the activity are agreed upon in advance by the players, (2) the rules describe classes of behavior rather than specific actions, (3) there are obstacles to be overcome, (4) a scoring system is specified. In general games are more organized than "play" or "pastimes", but less organized than "rituals", all of which are "non-games". In "play" and other activities which merely pass time, there are no rules, no necessary obstacles to be overcome, and no scoring. In "rituals" (greeting formalities, graduations, funerals, etc.) the specific actions are defined, rather than classes of acceptable and unacceptable behavior. Also, scoring usually is not present. In general, games are more flexible than "rituals" and less open-ended than "play" and "pastimes."

By this definition most normal classroom teaching is not a game. Usually, all the rules are not completely specified in advance. Often this forces students to "test limits" in order to discover the unstated rules and boundary lines. This is necessary for would-be players, but from the teacher's point of view, limit testing is a discipline problem and a poor use of valuable learning time. Nor is classroom teaching a game when teachers specify the precise activities to be performed. This ritualized learning is clearest in older "learning by rote" methods, but is present today in slightly altered forms, e.g., making specific problem assignments in mathematics, learning through programmed texts. When rules are not agreed upon in advance, often classroom activity becomes a pastime, literally a way to pass time between more meaningful activities.

2. Structural definitions of Motivational goals

In scoring a TAT for n Ach, n Aff, or n Power the first decision to be made is what motivational goals are present e.g., excellence, friendship, influence. Similarly in diagnosing what motives are aroused by a specific game the first task is to determine what goals are defined by the structure. These goals may be identified by analyzing the nature of the scoring system, the nature of the obstacles and the locus of decision making.

a) Scoring systems

"O-Sum" scoring systems have a fixed number of points. When one player makes points, another player automatically loses points, the sum thus remaining a constant zero. Arm wrestling, cup play in golf, betting games, chess, grading on the curve "pull-over" games all have O-Sum scoring systems. In "Non-O-Sum" games the number of points is not constant. Each player is free to earn as many points as he can, independently of how many points the other player makes, e.g., match play in golf, archery contests, pre-set academic grading standards, Boy Scout Merit badge progression. In "Shared sum" scoring systems when one player scores, it is a score for all players on his team. Almost all team sports from baseball to tug-of-war have "Shared-sum" scoring systems. "Shared-sum" scoring always occurs with O-Sum or Non-O-Sum scoring. The reverse is not true: "O-Sum" and "Non-O-Sum" scoring do not always occur with "Shared-sum" scoring.

"O-Sum" scoring systems structurally define power goals since points are awarded only when one side forces the other side to yield or when one side demonstrates superior power, influence or control. Inevitably in "O-Sum" grading systems, students are in direct competition with each other. Grading on the curve or by rank ordering scores is ultimately a "O-Sum" scoring system since how well a student performs is determined only by comparison to others. One highly effective strategy for doing well in "O-Sum" games is to sabotage other players. Weakening your opponant is just as effective as strengthening yourself. As in all power games sabotage (e.g., destroying other students' notebooks) is a valuable strategy.

"Non-O-Sum" scoring defines achievement goals since it gives greatest value to independent, self-reliant accomplishment. Contrary to "O-Sum" games, "Non-O-Sum" games can be played alone, without direct competition with others. In such cases, sabotage is not a useful strategy for making points. In "Shared sum" games affiliation motivation is salient since making points is a key method of "establishing, maintaining or restoring friendly interpersonal relationships." Anyone who has played on a consistently winning team knows how points lead to happy, friendly relationships among team members. Academic situations rarely are "Shared sum" games, thus missing the potential facilitating effect of high affiliation motivation.

b) Obstacles

In all games points are made when obstacles are overcome. The motivational goals of every game depend on the nature of the obstacles to making points. For example, n Aff is not particularly valuable to a boxer since the obstacle is the opponent's strength and skill. The boxer must demonstrate his influence over his opponant, not his ability to get along harmoniously. In general when the obstacle is the opponant's potency, n Power is a valued asset. N Ach is valuable when the obstacles are within the player himself. In target shooting, for example, the standards are fixed and inanimate. The player must overcome a variety of inadequate personal resources and skills to score. In some games, the obstacles are both the opponant's and the player's skills as in fencing, ice hockey and football. These games call for both power and achievement motivation. Obstacles to scoring also can exist within a team, its degree of cooperation, and combined strength. In such games the desire to perform in an effective coordinated manner is necessary, i.e., n Affiliation is important. Most complex team games have power, achievement and affiliation obstacles, thus calling forth triple motivation.

Many adolescents find sports more interesting and involving than studying. Perhaps this is because all three motives are so clearly and strongly invoked by complex team games. From this perspective, the classroom is neither complex, a team effort, nor a game. When students respond to their natural affiliation needs in the classroom, more often than not, they are obstructing the teacher's goals. There is a curious logic in this student response. When a teacher creates an n Power classroom, the obstacle to success is the teacher, his standards, his assignments, his disciplinary and rewarding power. As we have seen, sabotage is an appropriate strategy in power situations. What more effective way is there for students to demonstrate potency than to gang up on the teacher, to jointly sabotage the teacher's efforts. There is greater strength in friendly team effort, and often it is more fun.

c) Locus of Decision Making

Motivation is also a process of decision making. The goals which define different motives simultaneously define how decisions are made. Obviously the object of n Power is to make decisions for others, the object of n Ach, to make decisions for oneself, the object of n Aff, to make group decisions agreeable to the majority of members. Similarly the motivational character of games can be inferred from the decision-making process. In football, the quarterback makes decisions himself for the team. Thus a quarterback is encouraged by his position to demonstrate both achievement and power motivation. For the rest of the football players, compliance is required for the sake of affiliation and team power. In the classroom, carrying out the assignments often is less palatable since it is not in the service of power or affiliative goals agreed upon in advance. Students' compliance often is only in the service of the teachers' achievement goals and in the students interest in avoiding harm.

3. Structural Definitions of Extent

After a TAT has been scored for achievement, power or affiliation imagery, the coder searches for other sub-categories in the scoring system. The number of sub-categories found is a measure of the intensity or extent of the motive. Scoring is a two stage process of discovering the direction and extent of motivation. In games, the scoring system, obstacles and process of decision making, define the motivational directions of the game. Two factors define the extent to which those motives will operate: Maximum extent of strategy, and maximum extent of tactics.

a) Maximum extent of strategy

Strategy is the overall plan for attaining the goal. The maximum possible complexity, variety and extent of strategy possible in a game is roughly approximated a) by the number of different ways to score and b) by the number of times it is possible to score in a game. In chess the only way to score is by a checkmate, and as soon as the score is made, the game is over. In boxing, another power game, there are many ways to score and as many scores possible as there are rounds. Thus, power motivation should be more strongly aroused in boxers than in chess players. Similarly, power motivation should be more strongly aroused in a chess tournament than in a single chess game. Classrooms with many ways of earning points and more frequent opportunities to earn points should arouse stronger motivation than classes in which there is only one way to score and only one time to score.

b) Maximum extent of tactics

For any given method of making points (e.g., field goals, touchdowns, extra points in football) usually there are a number of different possible moves in preparing for that score (running, passing, punting). Tactics are the arrangement of moves to make a score. A rough index of the extent of tactics is the number of different moves possible in preparing for a score. In chess several of the most powerful tactics are "forks", "pins" and "checks". In some modern language classes taught solely by the aural-oral method only two tactics are used, verbal questions and memorization. The increasing popularity of multimedia classrooms have made larger numbers of learning tactics available to students. In classrooms as in games, the maximum number of tactics available is an indicator of how much motivation will be aroused.

Table 4.2 below summarizes the scheme for analyzing the motivational structure of games.

TABLE 4:2

Motivational Structure of Games

Dimensions of Games	Motives		
	n Achievement	n Power	n Affiliation
Goals:			
Scoring System	Non-0-Sum	0-Sum	Shared Sum
Obstacles	Personal	Opponent	Cooperation
Locus of Decision Making	Individual Player	Captain or Leader	Team
Extent:			
Strategy	1. Number of different ways to score 2. Number of rounds in game		
Tactics	1. Number of different ways to prepare for scoring		

According to this scheme there are practically no pure affiliation games. Perhaps this is because the real scores in affiliation are subjective, internal feelings. Most ordinary affiliation activities are either unorganized, e.g., parties, mixers, or are simple, one-round activities with no score, e.g., stunts, gags, impersonation. Competition is central to games as defined above and inimical to pure affiliation activities. Affiliation motivation obviously does play a part in many competition games, but usually is in the service of other motives. If one were to rank order motives in terms of the emphasis given to them by the game structure, n Aff seldom would be the primary motive, at least according to this analytic scheme.

It should be clearer now how structural properties of games help create motivational climates! "The feelings workers have about the constraints in the situation," "the feeling of being your own boss," "the feeling of being rewarded for a job well done," "the sense of riskiness and challange," "the feeling of general good fellowship," and "the feeling that management isn't afraid of different opinions." The structure and the leadership style probably are two most important situational factors which create the group climate and arouse motivation in group members.

TWO EXAMPLES OF CHANGES IN THE MOTIVATIONAL STRUCTURE OF LEARNING

No person is without motivation. People differ only in what motives are salient and strongest. Similarly there is no such thing as a classroom without a motivational climate or a motivational structure. Many teachers are unaware of the impact their climate and teaching structure have in arousing certain motives and depressing other motives. Two examples may help clarify how minor structural changes can have major effects on performance and involvement.

1. Restructuring a Business Education Typing Class

In most high schools, business education classes are considered low level subjects for non-college bound students who must prepare in secondary school for vocations after graduation. For students with little interest in education, these classes are an institutionalized dumping ground. Discipline problems are often more frequent and severe than in the more prestigious college preparatory classes. Even the most well prepared, experienced business education teacher can face seemingly overwhelming non-course classroom problems. This was true of the teacher whose classes are described below. Before teaching high school typing and heading the business education department at a large suburban high school, this teacher was an assistant professor at a nearby college. Also, she is the author of several published texts on typing.*

TABLE 4:3

Comparison of Two 10th Grade Typing Classes on Intelligence and Ability

Tests	Classes		p
	1965-66 (N = 11)**	1966-67 (N = 12)	
OTIS	m = 102.2	m = 104.7	N.S.
Nelson-Denny grade level	m = 11.0	m = 10.6	N.S.

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*For further information contact Dr. Antonette Di Loretto; Head, Business Education Department; Arlington High School; Arlington, Massachusetts.

**Two students dropped typing class in the third quarter because of consistently poor work. They are not included in this sample of 11.

In 1965-66 this teacher taught an office-practice typing class for three quarters of the four quarter school year. Shorthand was taught in the fourth quarter. In 1966-67, the following year, toward the end of the first quarter, she decided to structure the typing class differently. Her decision was stimulated by a n Ach course she took with several other teachers, and by the low interest and involvement her students had shown for several years.

In both 1965-66 and 1966-67 the students in her class were comparable in intelligence as measured by the OTIS, and ability as measured by the Nelson-Denny Test. In both years the text, typing test material, typewriters, classroom and teacher were the same. Only the learning game was defined differently.

a) Scoring System

In both years the Non-O-Sum scoring system was used. An individual's final grade depended on his own performance in comparison to set standards.

b) Nature of the Obstacles, Strategy and Tactics

In 1965-66, as in most typing classes, progression through the text is taken to mean increased skill since exercises become more difficult. Lack of practice was assumed to be the only major obstacle. Greater practice would increase the gross number of words typed per minute (GW/M), and decrease the number of errors (E). Both of these elements are reflected in the final Net Words per minute (NW/M): NW/M = GW/M - (2 x E). These two measures (GW/M, E) reflect the extent of strategy. In 1965-66 the tactics were, practice and more practice, and still more practice.

In 1966-67 either GW/M couls be increased, or E decreased, just as in the previous year. However, the number of tactics for accomplishing those goals were radically increased. Under the new structure all typing test material was inspected before taking the speed test. Difficult strokings were identified by the group and solutions discussed. Also, the students were encouraged to search for personal obstacles, e.g., heavy clanking rings, mental blocks, sitting position, etc. A variety of new tactics were discovered when the new obstacles were identified. The increased focus on personal obstacles and new tactics means that achievement motivation should be increased and be reflected in higher typing scores.

c) Locus of Decision Making

In 1965-66 the teacher decided by herself how many NW/M would earn what letter grades. This helped create the standard power teaching structure. In 1966-67 the teacher and the class determined how many NW/M would earn different letter grades. This shifted the structure towards n Affiliation, away from n Power.

In 1965-66 all students' typing speeds were posted on a bulletin board once a month. The following year all students made daily records of their speed growth. On the basis of this graph students were asked to set short and long-term scoring goals. This was not done the previous year. Almost every day in 1965-66 typing tests were given by the teacher, who chose their length. Every week only the best score of the week was counted towards the student's course grade. In 1966-67, students chose when they would take a test, and the length of the test appropriate to their chosen goals. They also chose whether or not to have the teacher record their score. However, each week students had to turn in at least one score for grading purposes. All of these changes shifted the locus of decision making from the teacher to the students and shifted motivational structure from power to achievement.

In summary, students took greater personal responsibility for setting moderate risk goals. They explored to a far greater extent what personal obstacles there were and what instrumental activity might be taken to overcome them. There was an equal amount of structure both years but it was more flexible and open to initiative the second year. Students determined fair rewards for their efforts. Cooperation was encouraged. In 1966-67 the structure and climate encouraged students to think and act like people with strong n Ach. In contrast during 1965-66 the class was structured primarily to increase power-compliance motivation. Graph 1 which is shown on the next page, presents the progress of the two classes over three quarters of the school year.

At the end of the third week of the first quarter, before n Aff, n Ach structure was introduced, there were no significant differences in the performance of the two classes, both averaging 39 NW/M. By the end of the third quarter the 1966-67 class average was 66 NW/M, 54% more NW/M than the 1965-66 class. At the end of three quarters, nine out of the ten students tested in the 1966-67 class did better than all eleven students tested in the 1965-66 class. The lowest scorer in the 1966-67 class was tied with the highest scorer in the 1965-66 class at 50 net words per minute ($z = 4.46$, $p < .0001$, Mann Whitney U-Test, two-tailed). A further look at Graph 1 suggests that the students in the Power class may have lost interest toward the end of the third quarter with the advent of Spring vacation and the end of the typing class. By contrast, it appears that interest and effort remained high during the same period in the class structured for n Ach and n Aff. Unfortunately no TAT's were obtained from these students, thus making it impossible to tell if their n Ach and n Aff were increased beyond the classroom experience.

RE-STRUCTURING A MATHEMATICS CLASS

Elementary school mathematics classes can have problems similar to high school business education classes. Although the students are younger and the subject matter different, classes structured for power seem to generate the same problems (e.g., listless compliance, passive resistence, rebelliousness.) In fifth grade it is especially popular to "hate math". These standard problems were encountered by a novice male teacher during his first full year of teaching. During the following summer this teacher decided to restructure the teaching to meet the needs of the age group and subject matter more appropriately. The following is a description of how the fifth grade math class was re-structured as a "Math Game".

The "Math Game" was modeled after a simulated "Business Game" (Litwin and Ciarlo, 1961) which was designed originally as a device for teaching achievement motivation. The Math Game content consisted solely of the text book, Elementary School Mathematics (Addison-Wesley, 1964). The students' activities were structured by the following "Math Game" rules:

GOVERNMENT CONTRACTS

Each student contracted with the "Government Contract Officer", (the teacher) to produce a chosen percentage of correct answers in each chapter of the text. Contracts were made for one chapter at a time. The student chose his own deadline for completion of the chapter. The contract then was co-signed by the students and the Government Contract Officer.

Math Contract

The undersigned will attempt to do correctly ______ per cent of the problems in chapter ______.

The sum of $______ has been deposited with the government of the class for materials and franchise.

I understand that 10% of the gross return will be deducted from my payment for each day the contract goes unfulfilled after ________.

I also understand that the contract may be revised at any time prior to one week before due date for a fee of $10.00. One per cent of the gross return will be deducted for each wrong answer below the number intended.

Date:____________________________

____
Contractor

____
Govt. Contract Officer

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*Much of the description which follows is adopted from an unpublished paper written by Mr. James McIntyre for the Achievement Motivation Development Project. The full reference is listed in the bibliography.

THE SCORING SYSTEM

The score was kept with play money of various denominations. Mathematics achievement was measured by the total amount of play money the student had earned. Each student was given $2,000.00 to start playing the game. After signing the contract, the student paid a fee for franchise and materials. This fee was directly proportional to the percentage of correct answers for which the student bid: the higher the percentage, the more the student had to pay initially. In order to earn the maximum amount for his chosen percentage, the student had to meet his contract obligations, both in per cent of problems correct and deadline. The amount of money he earned was directly proportional to the goal he set. The higher the percentage of correct answers he bid for and produced, the more money he earned. The schedule of payments is as follows:

Schedule of Payments

% Tried	Cost	Return	Rate
100	$500	$2,000	4-1
90	$450	$1,350	3-1
80	$350	$ 700	2-1
70	$250	$ 400	8-5
60	$150	$ 250	5-3
50	$100	$ 150	3-2

There also were three ways for the students to lose money. Although contracts could be revised or extended at any time, as long as the deadline was not less than one week away, a flat ten dollar fee was charged. Second, students could lose money if they did not produce the number of correct answers for which they contracted, each missing correct answer costing one per cent of the payoff. Were a student to contract for 70% in a chapter with 400 problems (i.e., 280 correct answers) and turn in a paper with only 270 correct answers, 10% would be deducted from his payoff. In this case the penalty would be $40.00, as the payoff on a 70% contract is $400.00. The students were under no restraint to stop working after reaching their percentage goal. They could protect their investment by doing more problems than contracted for. Thus they could hedge against possible errors and not lose as long as they had produced the required number of correct answers. The third way to lose money concerned deadlines. Since the student set his own time goals, the penalty for being overdue was severe. For each school day a chapter was late, 10% of the payoff was deducted. A student contracting for 100% correct answers (Payoff, $2,000) lost $200 for each day over the deadline.

DAILY PROGRESS CHARTS

In order to have an adequate self-assessment of daily work and progress, graphs were issued each Monday. The teacher specifically stated that he did not want to see them. They were entirely for the personal use of the students. An explanation of their use was given in the first session and thereafter they were only mentioned by the teacher when he passed them out each Monday. The graph merely consisted of the number of problems on the ordinate and the seven days of the week on the abscissa.

END REWARDS

End of the year rewards were given to the six highest money winners in the class. The rewards were of the class's own choosing, and the winners had their choice from the following list: rabbit, gerbil, slot-car kit, jug of candy. In addition, an ice cream party was promised to all those who completed the book by the end of the school year.

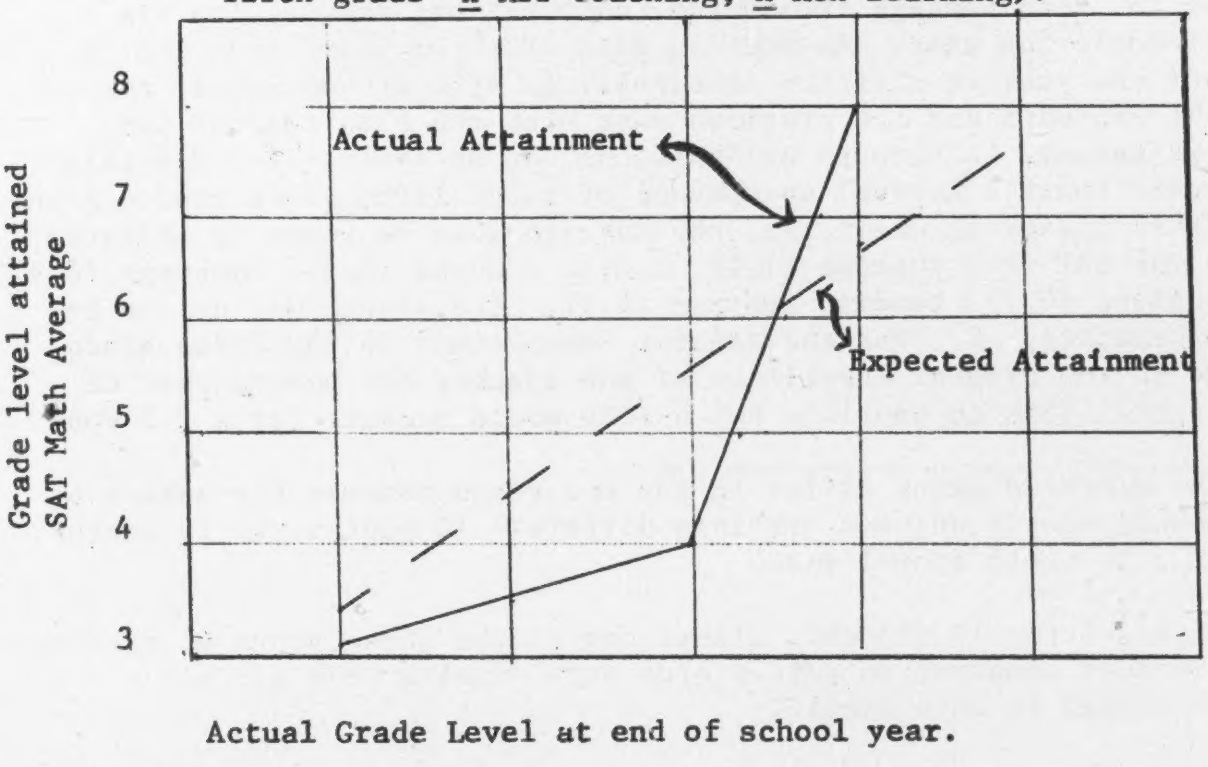
The scoring for the Math game was primarily a Non-O-Sum game, with the exception of the special prizes for the six highest money winners. The obstacles to scoring were quite clearly defined by ways to earn money and keep from losing money (i.e., production of the number of correct answers contracted, no revisions of contract due dates, no overdue contract fulfillments). In each case the obstacles were within the player and required the player to develop action strategies characteristic of people with strong achievement motivation: accurate moderate risk taking, the use of feedback to modify goals. Decision making was almost entirely the personal responsibility of the students. They made their own assignments, determined their own pacing, worked through the book by themselves, and sought help from the teacher and friends as they decided they needed it. Often the students collaborated outside of class to discuss tactics for beating the game. In the process of lengthy calculation of the odds, they learned a good deal of practical mathematics. The teacher was able to establish a warm, friendly role as coach, consistent with the leadership style of people who foster n Ach climates. The teacher role as king of the classroom did not exist.

The math game was strikingly different from the previous year when the same teacher taught the same students using the same text book series. In the fourth grade no overall scoring was done, consistent with the beliefs of the private Quaker elementary school. Instead, written reports were given to parents periodically during the school year. The Stanford Achievement Test was given at the end of the year to inform teachers of their own success. Students were not informed of the results. Standardized chapter tests were given on completion of each chapter during the year as a general guideline for the teacher in pacing, preparing lectures, lessons and homework assignments. The school assumed that grades were unnecessary, an undue rush into the competitive world and detrimental to the spontaneous, genuine emergence of student interest in mathematics for the sake of mathematics. Obstacles to learning were not clearly defined by the structure, but were within the individual students more than in opponants' skill or group cohesion. Decision making was handled by the teacher. Other than the stated vague goal of learning mathematics, students were free to chose their goals, strategies, tactics. In practice however, the fourth grade mathematics class was a power-oriented play situation. In fact, students more often chose to ignore mathematics than to joyfully explore the elegant realm of mathematical logic.

During the same year this teacher was conducting the fourth grade class, an experienced teacher was teaching a different fifth grade class, structured like the fourth grade class, using the same text series, etc. Both the fourth and fifth grade traditional classes in 1965-66 can be used as comparison groups for the 1966-67 fifth grade class which learned by the Math Game. Since the full battery of Stanford Achievement Tests were given in the Spring of each year it is possible to make year to year comparisons in the mathematics gain scores. Graph 2 below, presents data on the progress of the same students in the fourth and fifth grades as measured by the Stanford Achievement Test (SAT) mathematics average.*

Figure 4.1

Progress in Mathematics achievement on SAT for one class (N = 19) over 2 years: (fourth grade--power teaching, play learning; fifth grade--n Aff teaching, n Ach learning).



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*The math average is the average of math computation and math reasoning sub-test scores.

From March in the third grade to March in the fourth grade the average gain was 0.2 years, from 3.8 to 4.0. From March in the fourth grade to June in the fifth grade the average gain was 3.0 years, from 4.0 to 7.0 (expected gaines 1.3). This achievement spurt may be measured in a different way by comparing the number of students in the fifth grade who made at least the expected gain (1.3).*

TABLE 4:4

Number of students gaining below, equal, or greater than expected average math achievement in the fourth and fifth grades (N = 14).**

SAT MATH AVE. GAIN

	Below expected gain	Equal or greater than expected gain
5th grade "Math Game"	0	14
4th grade	12	2

$$\chi^2 = 17.65$$
$$p < .0001$$

When similar comparisons are made for the componants of the SAT Math Average (reasoning, computation) the results are virtually the same. An average gain of three years in a little over one year is striking especially in view of how poorly the same students did the previous year with the same teacher and text series. Alternate explanations can be given. 1. Was this growth spurt a general phenomenon of these fifth grade students in other classes as well? No, the average gain in years as measured by the SAT was, science (1.1), Social Studies (0.7), language (0.9), spelling (0.7), reading average (1.2). The growth was unique to mathematics. 2. Was the greater improvement in the fifth grade due to the greater experience of the teacher the second year he taught? This is possible but hardly would account for a 3.0 year gain by national norms. In addition, there is the comparison group of fifth graders taught by a teacher with 15 years of experience; his students gained an average of 0.6 years in mathematics attainment in one year (N = 15). 3. Was there a tendency for the students who were farthest behind at the end of the fourth grade to show the greatest gains during the fifth grade? No, there was a slight, but not significant tendency for the students farthest ahead at the end of the fourth grade to show the greatest gains in the fifth grade. The only major variables which could increase the actual gains were the new structure and climate created in the fifth grade.

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*The expected gains differ in the two years because the number of school months between testings differs: 10 months vs. 13 months, in a 10 month school year.

**Five of the 19 students missed one of the three years of testing. Because comparative gain scores were missing they are not included in this sample.

Other evidence, though less scientific, may be more persuasive to teachers, namely what happened to the individual children? Did they become grasping entrepreneurs and cut-throat businessmen? Did they work solely for the rewards? What were some of the other by-products of this structure? The teacher's impressions were very clear.*

Children who did nothing in mathematics in fourth grade, except under duress, suddenly began taking their books home on weekends. Very few deadlines were missed. Many students began assessing themselves more optimistically, yet realistically, and they performed up to those standards. One boy fidgeted through the entire year in mathematics in fourth grade. Threats and stern words could not focus his attention, nor could they keep him in his seat. His total output reflected a small percentage of his ability. Within the new structure, however, he chose his first goal of 70% with two weeks to finish the contract. Within three days he revised his goal upward to 100%, paid the extra fee, and did all the problems with only eleven errors out of almost 400 problems. A girl student was considered by the teacher to be mathematically slow when in the fourth grade. She was consistently at the bottom of the class and seldom handed in assignments at all. Her 100% contract for the first chapter was the first completed and with only six errors. Her error total was the lowest in the class. Four other girls in grade four found math an excellent time to do other things, such as writing notes to one another and surreptitiously playing with clay. In grade five they still clustered around each other, but when asked to be quiet, it was generally for disagreeing too loudly over mathematics problems (e.g., the exact way to program a function machine). All were punctual and accurate. Two other boys, performed well on occasion in grade four, but were constant behavior problems. They worked so diligently together in fifth grade that the teacher often forgot they were in the classroom. Another boy resented all adult structures given him. By setting his own limits and working at his own speed within a structure that he felt was his own, his work in mathematics was free from the anguish that once accompanied it.

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*The following comments are summarized from McIntyre, 1966, pp. 7,8.

Once during the year, several students decided to take a vacation from math for two weeks. They came to class and were allowed to relax, so long as they didn't disturb others. They had budgeted their time for the year and realized they could afford the vacation. After two weeks they returned to the task and successfully completed the year's work. It was the teacher's impression that in the first half of fifth grade, enthusiasm was generated more by the game than by intrinsic interest in mathematics. However, in the second half of the year, buoyed by new found competence, the game, prizes and play money became more or less irrelevant while the pace of work continued. Mathematics itself had become more interesting.

There are some major inadequacies in these research studies. Measures of motivation were not obtained at the beginning of the year, thus changes in motivation cannot be assessed accurately. Other questions remain. Do these structural changes influence motivation and activities outside the classroom? Do the changes generalize? Are there any negative effects? Further research will investigate these questions. For the moment, however, there is striking evidence that changes in the structure of learning can radically increase performance. These changes do not require elaborate, expensive and sophisticated new equipment. Minor but critical modifications in the way traditional materials appear sufficient to produce these changes.

MOTIVATIONAL STRUCTURES IN CULTURES

Education, whether it is formal or in the form of apprenticeship and rites of passage is a principal method of socializing the young into prevailing cultural values, beliefs and motives. McClelland (1961) has shown how child-rearing practices first introduce salient motives to children. We have seen how the structure and climate of formal education selectively strengthens motives in the process of teaching knowledge and skills. There are other ways in which a culture socializes individuals and shapes their motive hierarchy. We should examine a few of these other contexts of motive acquisition for several reasons. If education is to prepare students for full, effective participation in their culture, the choice of educational climates and structure should be based on the culture's prevailing motivational demands. This requires a diagnosis and understanding of cultural motives before the appropriate teaching climates and structure can be created. This approach, however, is conservative in its most basic sense, to conserve the existing order and resources. Education has an ameliorative purpose as well. Motive training also can serve this purpose once an analysis of the needed cultural motives is made. Finally, by looking at these other areas of motive acculturation, educators may discover new tactics for motive training in schools.

1. Games in Cultures

The games children play in a given culture do more than help them pass time. They serve to introduce children to predominant cultural motives in simple forms. A diagnosis of motives in actual games is one way of understanding cultural motive demands. In a series of articles, Roberts and co-workers have advanced a theory regarding the function of games in society (Roberts, Arth and Bush, 1959; Roberts and Sutton-Smith, 1962; Roberts, Sutton-Smith and Kendon, 1963; Sutton-Smith, Roberts and Kezelka, 1963; Sutton-Smith and Roberts, 1964; Roberts, Hoffmann and Sutton-Smith, 1965). The theory implies (1) that there is an overall process of cultural patterning whereby a society induces conflict in children through its child training processes; (2) that society seeks through appropriate arrays and varieties of ludic modes (game playing) to provide an assuagement of these conflicts by an adequate representation of their emotional and cognitive polarities in ludic structure, and (3) that through these models society tries to provide a form of buffered learning through which the child can make unculturative, step-by-step progress toward adult behavior. (Roberts and Sutton-Smith, 1962).

Games model central issues in societies. In game playing children have the opportunity to face these issues and practice solutions. In this way they are prepared for the societal conflicts which they will face as adults.

Roberts' first step in substantiating this theory was to describe three types of games: skill, strategy and chance games. Skill games must involve skill and may or may not involve strategy or chance, e.g., marathon races, hockey, hoop and pole games. The defining property of skill games would categorize them, in general, as achievement games in our scheme. However, prizefighting is a skill game which involves power motivation. Thus, skill games are somewhat broader than pure n Achievement games as previously defined. In games of strategy, physical skill must be absent, chance may or may not play a part, but obviously, strategy must be present. Roberts et. al. (1959) list chess, go, poker and the Ashanti game or wori as examples, all of which we would classify as primarily n Power games because of their inevitable 0-Sum scoring systems. Again, the translation is not perfect. "Strategy" games can have n Ach involved secondarily. The relationship between strategy games, n Power and acculturation is evident in the following comment:

> In a game of strategy, for example, he (the player) can practice deception against his powerful opponant and can even 'kill' him, but in addition he can also command his own forces, as he is commanded by those whom he normally obeys. (Roberts and Sutton-Smith, 1962, p. 183)

In chance games, chance must be present, skill and strategy must be absent. Our scheme excludes games of chance because they are not theoretically germane to n Ach, n Aff or n Power.

In Roberts' first attempt to validate his general hypothesis (Roberts, Arth and Bush, 1959) the researchers found that the presence of power games in societies was positively related to the degree and complexity of political integration. The number of chance games in cultures was positively related to the belief that the gods are non-aggressive and benevolent. Subsequent cross-cultural research by Roberts and Sutton-Smith (1962) showed that the frequency of skill and strategy games in societies were strongly related to emphasis in child-rearing practices on achievement and obedience, respectively. The frequency of chance games was related to stress on performance of routine duties and punishment for initiative. These two child-rearing practices should inhibit the growth of n Ach.

The data from Roberts and co-workers strongly indicates that games both teach and reflect central motivational concerns in societies whether primitive or advanced. From this point of view recess is not just a time for the itchy kids to blow off steam. It is a motivational learning time perhaps even more important than learning during social studies class about the eating utensils of Eskimos. It would be very easy to pick games for gym and recess which strengthen desired motives. Or, for example, it would be perfectly appropriate for Peace Corps volunteers, interested in promoting economic growth, to introduce a variety of new ludic activities calling for skill and n Ach. Games provide an opportunity for both cultural motive diagnosis and motive training.

2. Social Structure

If child rearing, adolescent game playing and motive training, through the process of education, are designed to prepare people for mature, effective adult lives, we must examine the context of adulthood to see which motives are most important to teach. If obedience and compliance are required in adulthood, then strengthening power-compliance motivation is critical. An analysis of the social structure status system can provide good clues for what motives are most important.

Robert LeVine (1966) has performed such an analysis on the status systems of three Nigerian groups; the Ibo, the Hausa and the Yoruba. Like McClelland (1961), LeVine makes a "culture lag" hypothesis, namely that cultural changes in motivation will be reflected in national statistics, such as rate of economic activity, up to two generations after these motivational shifts occur. LeVine differs from McClelland in looking to the social structure rather than to folklore for evidence of these shifts. LeVine assumes further that as the status systems change they require and recruit new motives. Thus an analysis of the status systems of the Ibo, Hausa and Yoruba in the latter 1800's should predict differences in the strength of different motives in school boys today. In his book, Dreams and Deeds (1966), LeVine presents data confirming his theory. The following is a summary of LeVine's description of the 19th century status systems in the Hausa and Ibo (the Yoruba are a complex mixture of both Ibo and Hausa systems).

The Hausa developed a "short-term autocracy" political system in which the kings of the empire ruled vassal states. The kingship was rotated among three ruling dynastic lineages. With each rotation went the right of patronage: some office holders were discharged and others of the king's choosing were installed. Office holders usually had responsibility for fiefs which they administered and from which they collected taxes, some of which they kept. During the tribal wars, office holders raised troops from their fiefs and in return, received booty and captive slaves from the king.

> So long as an office holder retained the favor of the king through demonstrations of loyalty and obedience, he was allowed to overtax and keep the surplus himself as well as to exceed his formal authority in a number of other ways. Thus the system had a despotic character, turning on relations and dependence and power between subordinates and their superiors. (LeVine, 1966, p. 26,27)

As a result, the principal method of rising socially was to become the client or follower of a person of greater status, to demonstrate worthiness by being loyal and obedient, and in turn by collecting additional followers for the patron. In these ways the fortunes of the patron were promoted and the follower's nomination to office was made more likely. Obedience led to office and office led to wealth.

> Clearly this system of status mobility placed a premium on loyalty, obedience and sensitivity to the demands of those in authority over a man; excellent performance in an independent occupational role, self-instigated action towards goals that did not benefit the competitive chances of a man's patron, did not yield the man's access to the major status rewards of the society and might conceivably damage his career. (LeVine, 1966, p. 30)

Implicit in this status system is the belief that there is a fixed and limited amount of goods. Access to those goods was dependant on the relative strength of the patron. Attaining and falling from office depended on compliance, submission and subservience to the patron. The status system scores were O-Sum and generated power-compliance motivation. Obstacles to success existed primarily in the strength of other patrons. One way to change the balance of power was to collect new clients for a man's own patron. Innovation per se and developing one's own unique skills was not valuable. Obviously also, the locus of decision making was with the patron, not with the client.

In contrast, during the 19th century the Ibo were more than 200 politically independent tribes, each with their own status systems. In general, however, tribes reached decisions through councils of elders who were highly responsive to the needs and wishes of tribesmen. In addition, most tribes had title societies, entrance into which depended on acceptance by members, payment of entrance fees and providing a feast for the membership. The feasts, more than the other two requirements, effectively limited entrance to those of some financial means. Membership entitled the man to share other entrance fees, prestige and in some areas, political power as well. Most of the titles were not inherited, but were open to men who could earn them. Because there were many routes to earning the necessary fees, the status system encouraged men to determine for themselves what personal skills and knowledge were most useful. This emphasized a man's ability to make carefully calculated estimates of his ability, and to pursue his individual entrepreneurial goals. Higher status and power was granted on the basis of individual economic achievement, whereas in the Hausa, higher status granted greater wealth.

> Occupational performance was the primary locus of social evaluation and performing well enough as a farmer, trader or fisherman to obtain a title...required the continual application of his own efforts in the service of his individual goals (LeVine, 1966, pp. 35,36).

The clearest overall difference between the Ibo and the Hausa was the primary political orientation of the Hausa status system and the occupational emphasis in the Ibo status system.

Although not formulated in this way by LeVine, the Ibo system implied that there was an unlimited amount of goods, and that goods, whether political influence or money, could be shared (e.g., sharing the entrance fee to title elders). It was a Non-O-Shared Sum scoring system in which the obstacles to success were within the individual. Decisions were made either by the individual himself or by a group of equals. N Ach and secondarily n Aff were the most valuable cultural motives. These differences in motives and social systems indicate a few of the ways the Hausa and Ibo are likely to misunderstand each other. The Hausa are likely to view the Ibo as upstart radicals who threaten the social order by their self-reliance, independence and lack of compliance. The Ibo see the Hausa system as cramping individual initiative and as an equal threat to their own social structure. The conflict of obedience and independence that we see today in Nigeria and Biafra was present in less violent forms 80 years ago in the status systems of the two tribes.

The application of the "game" scheme method of analysis to larger cultural phenomena is given weight by Foster's analysis of traditional peasant societies (Foster, 1965). Although not without his critics (Piker, 1966; Kennedy, 1966), Foster proposes that a universal characteristic of peasant societies is their belief in "the limited good." Whether it is land, wealth, friendship, honor, health, manliness or power, these goods are assumed to be fixed, finite and usually in short supply. Life is an O-Sum game. With respect to land in peasant societies this seems accurate and obvious. Other implications are not so clear. If good is limited within the society, new resources can be added only from outside the society, e.g., lottery winnings, Peace Corps volunteers. Foster suggests that this view is the reason behind extensive lottery betting in many peasant societies. Peace Corps volunteers, who do not appreciate this O-Sum view of the world, can get into trouble. When they enter a village they are likely to try to make friends with the first people they contact, often their neighbors. However, since the Volunteers are a scarce new resource their alliance with one family can be seen by the others in the village as a disruption of the distribution of goods. Thus, in making the first friend, many potential future friends are alienated. Wealth also is assumed to be limited and fixed in quantity. If one family happens to have a large crop one year, it is thought to be at the expense of others or by special conniving. In order to placate these suspicions and fears the fortunate family must immediately use up the additional crop in a feast for the village. This distributes the gains equally and maintains the status quo. The excess is neither stored, bartered nor saved. Postulating a belief in O-Sum scoring helps explain this economically irrational behavior. Similarly fertilizing a field to increase crop output is a threat to the balance of the social order and represents deviant beliefs. In many Latin American peasant societies even blood is believed to be non-regenerative, thus, in fixed supply. It is believed that bleeding injuries permanently decrease the amount of a person's blood. Given this dominant cultural belief in limited goods, the ideas of improvement, increase, investment with returns all are threats to the existing order.

It is unlikely that formal education alone can transform a society's belief in O-Sum scores to Non-O-Sum scores. On the other hand, the very pervasiveness of these beliefs means that change agents are presented with opportunities to influence basic values at every turn, from the nature of children's games to beliefs about quantity of blood to the grading system used in schools. It should be evident at this point that teachers do not have a choice of whether or not to create a motivational climate and structure, but only whether or not they want to be aware of the particular motivational climate they are creating. The meta-classification of games presented in this chapter, by its very generality, is not a tight definitive model. It's value is heuristic in illuminating the motivational character of structures in many contexts. Those educators who wish to stop discouraging certain motives and start encouraging the growth of other motives can use this scheme to get hold of what has to be changed. Many examples have been given, but the application of the scheme to new situations always remains a problem of guided social innovation.

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Chapter 5

The Motivational Impact of a Contract System of Instruction

Dora Zelnicker and Alfred S. Alschuler

The purpose of the present research is to assess the effects of a restructured school learning environment on students' motivation. Past research has indicated that courses designed to increase students' achievement motivation result in increased grades in school (Burris, 1958; Kolb, 1965), and in more serious future-oriented career planning (McClelland, 1968). Among businessmen, achievement motivation courses significantly increase entrepreneurial behavior (McClelland & Winter, 1969). There also is evidence suggesting that changes in the learning structure in normal school courses can have a significant effect on the achievement motivation of students. Alschuler(Chapter 4) has shown that when the learning process of a tenth grade typing class was restructured to cue in achievement motivation, the typing speed of those students increased significantly more than a matched group taught in a more traditional manner. Similarly, a fifth grade mathematics class, restructured to arouse achievement motivation, showed dramatic gains in mathematics achievement compared to the previous year when the same students taught by the same teacher learned much less. In the fifth grade, the average gain as measured by the Stanford Achievement Test was three years compared to 0.2 of one year in the fourth grade. No direct evidence was available to assess the carry over effects of the achievement oriented environments on the spontaneous frequency of students' achievement thinking; their n Ach. The present study examine the motivational yields of a restructured learning environment rather than the gains in tested knowledge and skills.

In the long run, changes in motivation may be of greater importance than changes in grades. Although parents and teachers are concerned primarily with grades (Stanford Achievement Test scores, Scholastic Aptitude Tests, etc.) and motivation only insofar as it effects the amount a student learns, the research evidence indicates that motivation is of primary importance. In general, grades best predict grades at the next level in school. The Scholastic Aptitude Test (SAT) score is a reasonably good predictor of college grades. However, professional progress and creative contributions are unrelated to success in college (McClelland, et. al., 1958). On the other hand, certain personality factors, such as achievement motivation, do predict long term career choices and career success (McClelland, 1966; Clayton, 1965). This combination of findings suggests that increasing motivation should have higher priority as an educational goal than increasing knowledge. Not only is this priority reversed in current educational policy, but also there is almost no evidence that secondary schools and colleges significantly increase any of these critical personality factors (Jacobs, 1957). Obviously it is important to find out if a restructured learning environment can change the levels of students' motivation, and if so, what environmental factors are responsible for the changes.

Any learning situation can be viewed as a game with goals, rules, players, equipment, etc. Alschuler (Ch.4) has presented a taxonomy of games which can be used to diagnose the motivational demands of different kinds of learning situations, or learning "games," for achievement, affiliation and power motivation. All games, as opposed to pastimes or rituals, have scoring systems, obstacles to be overcome, and methods of making decisions about moves, strategy, and tactics. Differences in scoring systems, locus of decision making, and obstacles determine the motivational character of the game, or in other words, the motivational demands of the learning environment.

The scoring system used in schools, as in other situations, defines a salient demand of the learning environment. A "O-Sum" grading system, where a student's performance is determined only by comparison to others (i.e., on the curve) leads to competition, rivalry and power concerns among students. A "Non-O-Sum" grading system, where the number of points is not constant, and each player is free to earn as many points as he can, tends to encourage independent, self-reliant accomplishment and achievement thinking. A "Shared-Sum" scoring system, as used in team sports but seldom in school, tends to encourage affiliation motivation since a point earned by one player is a point for all.

The locus of decision making constitutes another important way in which students' motivation can be effected. If the teacher determines the content, pace, and quantity of learning, then teacher and student often become opponents. Power motivation is encouraged, leading students to comply with the standards dictated by the authority. If the students, themselves, determine their educational goals, they are obliged to assume personal responsibility for their decisions. Self-reliance, independence, and achievement concerns are likely to be more dominant. There are many subtle ways in which schools assume responsibility for making decisions about how and what students shall learn, e.g., the degree to which the school day is organized. When the typical learning day is divided up into a series of eight 40 minute classes, this rigidly-imposed schedule conveys to the student that some external agent is controlling his educational career. Insofar as he complies with the prescribed schedule, it is assumed that his needs will be fulfilled and his success (as defined by school authorities) assured. The value of actively reflecting and acting upon one's own best interests, needs, and desires is not encouraged. Compliance is valued and power concerns rather than achievement concerns are generated. Affiliation motivation is encouraged when decisions are made by teams or groups, a situation that rarely occurs in schools sanctioned by the teacher.

Another aspect of the learning structure influencing motivation is the nature of the obstacles to success. If the teacher makes most of the important educational decisions for students or fails to make his expectations explicit, the teacher himself becomes the major obstacle to success. If the teacher is not in the role of major decision maker, a more collaborative, coaching relationship between teacher and student can be developed: thus shifting the role of the teacher from the "opposition" to "coach." In this situation, the major obstacle is the material to be mastered and the personal skills of the student necessary for mastery. Achievement rather than power is the most valued motive.

A number of school systems are attempting to make fundamental changes in the process of learning similar to the types of changes described above. Among these forward looking innovative schools is Meadowbrook Junior High School in Newton, Massachusetts. During the first three years of the Continuous Learning Program (CLP) at Meadowbrook, 150 students (half of the class) were randomly selected to remain in the Traditional Learning Program. In addition, at the end of the second and third year on the program, Thematic Apperception Tests, (our principal measure of achievement, affiliation and power motivation) were administered to all students. For these reasons Meadowbrook was a suitable place to assess the degree of change in motivation resulting from a restructured learning environment.

Description of Continuous Learning and Traditional Programs

As principal of Meadowbrook Junior High School in 1962, Mrs. Bettina King introduced a new educational program to achieve the following goals:

> "To help each student learn how to take charge of the development of his own potential and to understand that only he is responsible for his learning; to help each student become personally involved in his learning by actively exploring his own resources and those of the school and the larger environment; to help each student develop enough confidence in himself and in others to be able to think imaginatively and explore openly ideas, values, and relationships; to help each student find true satisfaction in learning."
>
> (Progress Report of Continuous Learning Program, 1965)

These goals are often summed up in two concepts, "agency" and "creativity." The Continuous Learning Program or CLP attempts to develop in students a belief that they are agents of their own behavior, that they control what happens to them. Also, the CLP attempts to stimulate students to think creatively, act imaginatively and reach unique solutions. There is considerable overlap between these stated goals and the nature of achievement motivation. Achievement motivation is a pattern of thought concerned with attaining some kind of excellence, e.g., finding unique solutions to difficult problems, improving oneself, etc. People with this pattern of thoughts tend to take greater personal responsibility and initiative, they explore their environment more actively, take carefully calculated reasonable risks, and utilize feedback from their actions more effectively (McClelland, 1953; Atkinson, et. al., 1958; McClelland, 1961). Although "agency" and "creativity" are more than "achievement motivation," the core of these several personality factors is identical. Thus, the effect of the CLP on students' achievement motivation becomes one critical test of the program's efficacy in attaining its stated goals.

During the summer of 1962, Mrs. King planned the program with a group of interested teachers recruited for this purpose. The design of the experimental program was implemented during the 1962-63 school year with 150 randomly selected 7th, 8th, and 9th grade students. Each succeeding year, more students were introduced to the CLP so that in three years all students in the school were on the new program. From its inception, a climate of experimentation and change has prevailed due to several factors. A research department within the school was established, headed by Dr. Charles Goff. Young and talented teachers were recruited from the Harvard Graduate School of Education, and were given freedom to try new approaches. There was close and sometimes hostile scrutiny given to the program by parents. Finally, there have been continued efforts by Mrs. King and her staff to improve the program.

Considerable variation exists in the way classes are run by different teachers but the stated goals of the program (above) act as a unifying philosophic orientation. Beyond these variations there are several major structural features common to all of the CLP classes. These features are relevant to our theoretical model of motive-including properties of the learning environment.

1. House System

The CLP is organized into four Units containing children of all ages, ability levels, and interests. Six House Advisors and a Guidance Counsellor make up a Unit Team, whose function is to devise the teaching techniques and materials they feel will best meet the needs of the students. Weekly meetings of the Unit Team are held to pool the resources of the team members, thereby allowing them to understand each student and make appropriate plans to help them.

Students are assigned to Houses led by House Advisors (teachers) which meet four times a week, giving the House Advisor an opportunity for group activity and for frequent conferences with the individual students. The House provides the student with time and place for assistance in choosing courses, making schedules, defining his goals, and evaluating himself in terms of them. The House Advisor also handles academic, social, and discipline problems of the students, approves courses chosen by the students, suggests remedial courses where necessary, remains alert to the possibility of potential failure, and meets with parents twice a year in conferences.

In the traditional program, a student's relationship with a member of the staff is most often the result of a problem encountered during class. The learning situation is structured such that any affiliative relationship occurs as a matter of chance or at a teacher's initiative, for the teacher has relatively few opportunities to confront the student in other than the formal teaching situation. The result is a more impersonal relationship between the student and his teachers characterized by formality, and sometimes, fear.

The Advisor System serves to narrow this traditional gap between students and the formal authority structure. This system, with its informal interpersonal orientation, demonstrates to the student that there is someone in the school who is actively concerned with his problems and his progress. With this change in the student's relationship to authority comes a change in the student's role. He is encouraged to become an active agent in determining his educational development. The teacher is no longer regarded as an obstacle to success, but as a coach. The student is no longer put in a position of subordination where rewards are contingent on the degree to which he satisfies the requirements established by teachers. The role of the teacher and Advisor becomes affiliative rather than power-oriented, leaving the student freer to define his goals and thereby assume greater personal responsibility for both his successes and failures.

2. Locus of Decision-Making

One of the largest structural changes instituted by the CLP was a shift in the locus of decision-making from teachers to students. The areas in which these changes occurred included choice of courses, procedural rules governing content, sequencing and rate of work, and organization of time.

In the traditional program, a prescribed curriculum is followed, allowing students little choice in terms of course offerings. With the exception of a Foreign Languages choice, the student's day is filled with a schedule of courses identical to all of his classmates. The CLP, on the other hand, provides the opportunity for students to select, within certain limits, the curriculum they will follow. Within the areas of literature, social studies, and science, for example, the student is free to choose from among the eight to ten courses offered in that subject. The student's choice is limited to a slight extent by the level of difficulty of the course, by his Advisor's suggestions, and by more subtle influences like the quality of the teacher, or the peer pressure to "travel together." Nevertheless, in most cases, the final decision rests with the student himself.

Once enrolled in a course, the traditional student is expected to learn the material as presented by the teacher, using the resources and textbooks which she has deemed appropriate to the course. Along with content, it is the teacher who determines the sequencing of the material, the rate at which it should be mastered, and the method by which students' progress will be judged. The CLP student is allowed greater autonomy in the classroom. Having agreed to the explicitly stated goals of the course, the student is allowed a greater amount of freedom in fulfilling his objectives. Unlike students in the traditional program, the CLP student himself decides what material will be covered, in which sequence, and within what amount of time. Students are bound to their decisions by a system of Contracts, a student-teacher agreement explicitly stating the conditions of work. For example, a student might undertake to complete three self-selected books and an essay within three weeks in his Russian Literature course. Having discussed the terms with the teacher, they both sign the written contract. Upon completion of the task, the contract is approved and commented upon by the teacher. Remarks are limited to the quality of the individual contract submitted, rather than to a comparative evaluation in terms of a class standard.

The degree to which an individual student may determine the conditions of his contract varies from class to class and from teacher to teacher. In the more traditionally-run CLP mathematics and foreign languages classes, the requirements are relatively rigid and explicit. In literature, science, and social studies, on the other hand, the learning situation is relaxed. Some teachers insist on a minimum of required assignments, while other teachers allow the student almost total freedom in determining his assignment.

The degree to which the contracts are individualized is dependent on the homogeneity of interests and ability among class members. In less homogeneous classes, the contractual criteria of quality, pace, and quantity of work are modified to fit the potentialities of the students. In more homogeneous classes, the teacher might suggest thirty assignments for the term, making the first ten compulsory, and allowing the remainder to serve as a guideline. The norm for most classes seems to indicate that a certain degree of structure does exist for those who require or desire it, while all students are encouraged to take the options available to direct their own learning.

Another important way in which CLP and Traditional students differ is in their freedom to select unscheduled activities. The organization of the traditional school day is clearly delineated in advance. Each student is expected to attend a specific class during every hour of the day. Moreover, the organization of activities remains constant from day to day. The CLP student is allowed one hour of unscheduled time per day during which he may participate in one of several activities. Alternatives include consultations with House Advisors, catching up on work at the library, or pursuing individual interests at one of several resource laboratories. Although not formally stated, students may opt to spend their free time in conversation with friends.

Unlike the students in the traditional program, whose schedule is identical to that of his classmates, CLP students are provided with sufficient time to express their individual tastes. The opportunity to individualize activities within chosen classes also allows the CLP student additional latitude to express behaviorally to himself and others the course which his education is taking. These options require the student to assume greater personal responsibility for his education.

3. Grading System

The CLP students are evaluated in a variety of ways. The Contract System provides one form of evaluation whereby assignments are judged in relation to the expectations set by teacher and student in advance. It is difficult to determine whether the standards for evaluation are more a reflection of the teacher's expectations of a student, the student's expectations for himself, or whether it is, in fact, a combination of the two. Nevertheless, one may conclude that the scoring system implied by the Contract form of evaluation is not an O-Sum system with a fixed number of points for which all class members compete. Neither is it a Shared-Sum scoring system where points earned by one class member are shared by all of his classmates. The Contract System most closely resembles a Non-O-Sum scoring system in which the number of "points" an individual may gain is a function of the amount of effort he wishes to invest in the task. However, the standards are not fixed and common to all students as is the case with most grading systems.

A second form of evaluation used in the CLP is the Test Profile. This form attempts to rate the student's achievement relative to his ability, as measured by a series of ability and aptitude tests. A series of standard comments by teachers indicate to parents and student whether the student is performing below, above, or in direct proportion to his tested abilities. This system means that a low ability student performing to capacity might receive the same comment as a higher ability student performing at his capacity.

A third form of evaluation consists of teacher-parent conferences conducted twice a year. Like the Test Profile, teacher's remarks are made in relation to the perceived capacity of the individual student. CLP students receive the last form of evaluation at the end of their last year on the program. It is a predictive grade given by each of their teachers for the subject areas and "track" the students have chosen for the 10th grade year. Under this system, an average ability student might receive "A" predictions for each of his subjects if he elected to enroll in the low ability track in high school, whereas he might obtain a predominance of B's and C's if he decided to choose the highest ability track. As in each of the other forms of evaluation, the set of standards by which the student is judged are neither fixed nor common to all class members. This type of evaluation most closely resembles a Non-O-Sum scoring system. But since the teacher's perception of the student's ability relative to other students is used as a component in the final evaluation, the grading system is partially a O-Sum scoring system.

In contrast to the CLP, in the traditional classes, the results of class tests, final examinations, and term paper grades are combined by teachers in various ways to comprise the final grade. Students are sometimes informed of the relative weights of these tests in determining their final grades, but often this information is not made explicit until the end of the term. Grades are then presented to students in the form of their relative standing within the class. A teacher may decide from the list of prepared grades what percentage of the total will constitute an A, what percentage a B, and so on. The student's relative standing within the class, then, ultimately determines the grade he will receive on his report card.

Although different in form, variety and regularity, both the CLP and Traditional programs employ a combination of Non-O-Sum and O-Sum scoring systems and neither systems use Shared-Sum scoring methods. This theoretical classification, however, hides an important difference between the scoring methods used by the two programs. In the traditional program all students compete against the same standards and grades allow for comparison against one's past performance or against other students' grades. In the CLP the direct comparison of "comments" to other students' "comments" is not possible, because they are based on the teachers' private perception of the students' relative potential.

In other words, "effort" is more important in the CLP than reaching a high level of attainment measured against fixed and public standards. With this de-emphasis on "standards," there is the increased emphasis on having "each student learn how to take charge of the development of his own potential and understand that only he is responsible for his learning."

4. Hypothesis

The two clearest innovations in the CLP are a shift in the locus of decision making and a more collaborative relationship with teachers. In almost every sphere of his academic functioning, the student is encouraged to take the initiative. As opposed to the Traditional student, the CLP student is expected to decide which courses he will take, how much work he will complete within a specified amount of time,and by which criteria he will be evaluated. For the Traditional student, all these decisions have been made, his only basic strategy for success in school is compliance with the expectations of others. With this change in the locus of decision making comes a concomitant change in the nature of the student's relationship to authority. The CLP teacher comes to be perceived as a partner or "coach" in the student's educational development, while the Traditional teacher maintains her role as the ultimate controller of the student's educational fate. Both of these changes suggest that there will be decreased concern with power among the CLP students.

The innovation in CLP grading is less striking and the motivational implications are less clear. It is uncertain whether the grading system will foster concern with unique accomplishments (higher n Ach) or concern with fewer and lower standards (lower n Ach). On balance, however, the greater necessity for independent, self-reliant decision making should lead to increased n Ach.

No predictions can be made about changes in n Aff since there is no Shared-Sum scoring, little "team" decision-making and little teamwork instrumental to learning. At least, there are no formal structural incentives for greater affiliative activities built into the CLP.

Sample

The population (N = 300) from which the sample was chosen consisted of all seventh grade students in Meadowbrook Junior High School during the academic year 1963-64. Half of these students were randomly assigned to the CLP and Traditional programs. Students from the two programs were individually matched on five variables known to be correlated with achievement motivation:

1. Sex - All subjects matched.
2. Age in years and months - All subjects were within one year range.
3. Intelligence - All subjects were matched within three points on the Otis Self-Administering Test of Intelligence, Form B, given in June, 1965.
4. School achievement - All subjects were within 50 percentile points on the School and College Ability Test, (SCAT), administered in June, 1965.
5. Socioeconomic Status (SES) - Father's occupation was used as a measure of SES, according to a modified eight level system of Hall and Jones' (1950) Occupational Classification System. All subjects were matched within five levels.

Students were excluded from the sample who (1) had entered Meadowbrook Junior High School after September, 1963, (2) had repeated any grade since 1963, (3) had switched programs during the three years at Meadowbrook Junior High School, or (4) lacked background data or test scores. For convenience, we decided not to obtain more than 100 of the 300 subjects, since a smaller sample size was adequate for statistical purposes. The resultant samples consisted of 42 matched pairs, 24 of which were female, and 18 male pairs. Matching data is summarized statistically below.

Table 5.1 Comparisons of CLP and Traditional Students at Meadowbrook Junior High School on Age, Intelligence, and School Achievement.

		CLP	TRADITIONAL		
Matching Variable		Mean	Mean	d	t[1]
Age (in months)	Total	146.4	146.1	0.3	.44
	Male	147.1	147.4	-0.3	-.05
	Female	145.5	145.5	0.0	0.00
OTIS IQ	Total	113.6	113.6	0.0	0.00
	Male	112.7	112.4	.3	1.03
	Female	114.2	114.5	-.3	-1.10
SCAT[2]	Total	54.9	51.8	3.1	1.04
	Male	60.9	54.5	6.4	1.40
	Female	50.4	49.7	.7	.17

*$p < .10$ **$p < .05$ ***$p < .01$

---

[1] t values based on the formula for difference between correlated means.

[2] School and College Aptitude Test (SCAT) scores represent percentile scores judged against national norms.

Insert Table 5.2 about here

The samples are well-matched on these important background variables. However, there are some limitations inherent in the sample. The overall IQ and SES levels are relatively high compared to national norms, thus limiting the generality of the findings somewhat. Also, we chose to use the SCAT scores as a matching variable instead of as a yield variable, even though students had been on the program from two years when they took the SCAT. A slight but not statistically significant difference exists at the end of two years in favor of the CLP group. This trend is more marked for the CLP boys than for the CLP girls.

Method

The Thematic Apperception Test (TAT) is the standard technique used to measure achievement, affiliation, and power motivation, (McClelland, et. al., 1953) as it can be scored for the spontaneous frequency and extent of various motivational thought patterns. TAT's were administered to students in June, 1965, after two years at Meadowbrook Junior High School, and in June, 1966, after three years at Meadowbrook. Testing took place on a school wide basis and was administered by school and guidance personnel. The TAT presented in June, 1965, consisted of a series of three pictures in booklet form. The first picture was a sketch of an adult male reading from a book, with a circle of three children around him. The second sketch portrays two men and a woman seated around a desk. The third picture is of a young boy, with a vague expression on his face, his face cupped in his hands. After looking at one of the pictures for 15 seconds, students were given twelve minutes to write a story about the picture, using the following four standard TAT questions as a guide:

1. What is happening? Who are the people?
2. What has led up to the situation? That is, what has happened in the past?
3. What is being thought? What is wanted? By whom?
4. What will happen? What will be done?

In June, 1966, all students were retested using the same test in the identical format. The order of the pictures was reversed in the second testing. Both sets of TAT's were scored for achievement motivation (n Ach), affiliation motivation (n Aff), and power motivation (n Power), according to the scoring system described in Atkinson, et. al. (1958). The scoring was performed professionally by members of the Motivation Research Group.[1] Although each motive was scored by a

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[1] The Motivation Research Group is a division of the McBer and Company. Central Plaza Building, Central Square, Cambridge, Mass. 02139.

TABLE 5.2

Comparison of CLP and Traditional Subjects at
Meadowbrook Junior High School on Socio-Economic
Status (as measured by father's occupation)

Socioeconomic Level	CLP[2]			TRADITIONAL[2]		
	Total	Male	Female	Total	Male	Female
1. Professional & High Administration	11 (26)[1]	5 (27)	6 (25)	7 (17)	2 (11)	5 (22)
2. Managers, Executives, Officials	14 (33)	6 (33)	8 (33)	22 (52)	8 (44)	14 (58)
3. Inspectional Supervisors, High-Grade Non-Manual	9 (21)	5 (27)	4 (16)	5 (12)	1 (6)	4 (16)
4. Clerical, Sales, Lower-Grade Non-Manual	3 (7)	1 (6)	2 (8)	2 (5)	1 (6)	1 (4)
5. Skilled Craftsmen, Foremen	2 (5)	0 (0)	2 (8)	5 (12)	5 (27)	0 (0)
6. Semi-Skilled Operatives	2 (5)	1 (6)	1 (4)	1 (2)	1 (6)	0 (0)
7. Unskilled	1 (2)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
8. Unemployed						
9. Unscorable						

1. Percentage of total in brackets.
2. A sign test of differences between Total CLP and Total Traditional resulted in a z score at 1.67, probability n.s.

different rater, each rater scored both the 1965 and 1966 tests for their respective motives.

Results

Analysis of the data is presented in the order in which the hypotheses were stated. The scores on n Power, n Ach, and n Aff are group means for the three motives

Figure 5.1 Changes in n Power from 8th to 9th Grade among CLP and Traditional Male and Female Students.

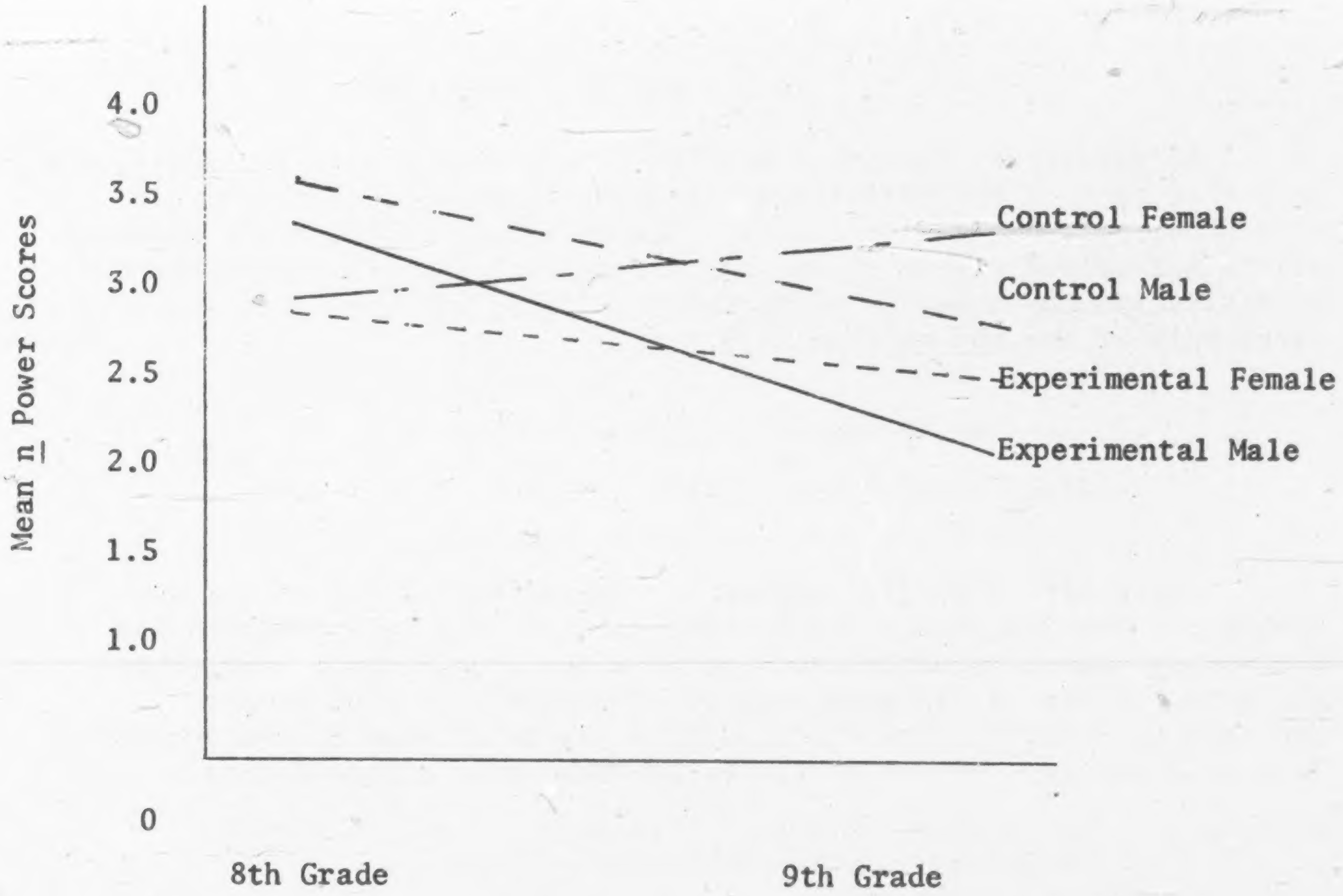

Table 5.3 Mean n Power Scores for Experimental and Control Groups (Male, Female, and Total) at the End of 8th and 9th Grades.

	Exp.	Con.	d	t	N
Spring, 1965					
8th Grade					
Total	3.19	3.21	-0.02	-0.03	42
Male	3.44	3.66	-0.22	-0.25	18
Female	2.87	3.00	-0.12	-0.15	24
Spring, 1966					
9th Grade					
Total	2.50	3.26	-1.76	-1.94**	42
Male	2.17	3.00	-0.83	-1.02	18
Female	2.75	3.45	-0.70	-1.06	24
Change					
Total	-0.69	0.05	-0.74	-1.08	42
Male	-1.27	-0.66	-0.61	-0.54	18
Female	-0.25	0.58	-0.83	-0.77	24

$^{*}p < .10$ $^{**}p < .05$ $^{***}p < .01$

As predicted, the power motivation of CLP students is significantly less than that of the traditional students at the end of three years at Meadowbrook Junior High School. These differences were not apparent at the end of the eighth grade, suggesting that the effects of the CLP on motivation may occur by a cumulative process which reaches significance only at the end of the third year.

Insert Figure 5.2 and Table 5.4 about here

These data strongly suggest an interaction effect of sex and program on changes in achievement motivation. CLP male students and Traditional female students decline in n Ach significantly more than the opposite sex in the same program. However, all four groups declined in n Ach to some degree during the third year at Meadowbrook. This could in part be due to taking the same test a second time.

Insert Figure 5.3 and Table 5.5 about here

There were no significant differences between the CLP and Traditional students as a whole or as subgroups of males and females at the end of either eight or ninth grade. There were no significant differences in amount of change in n Aff, nor were there any significant interaction effects. No changes were predicted.

Figure 5.2 Changes in n Ach from 8th to 9th Grade among CLP and Traditional Male and Female Students.

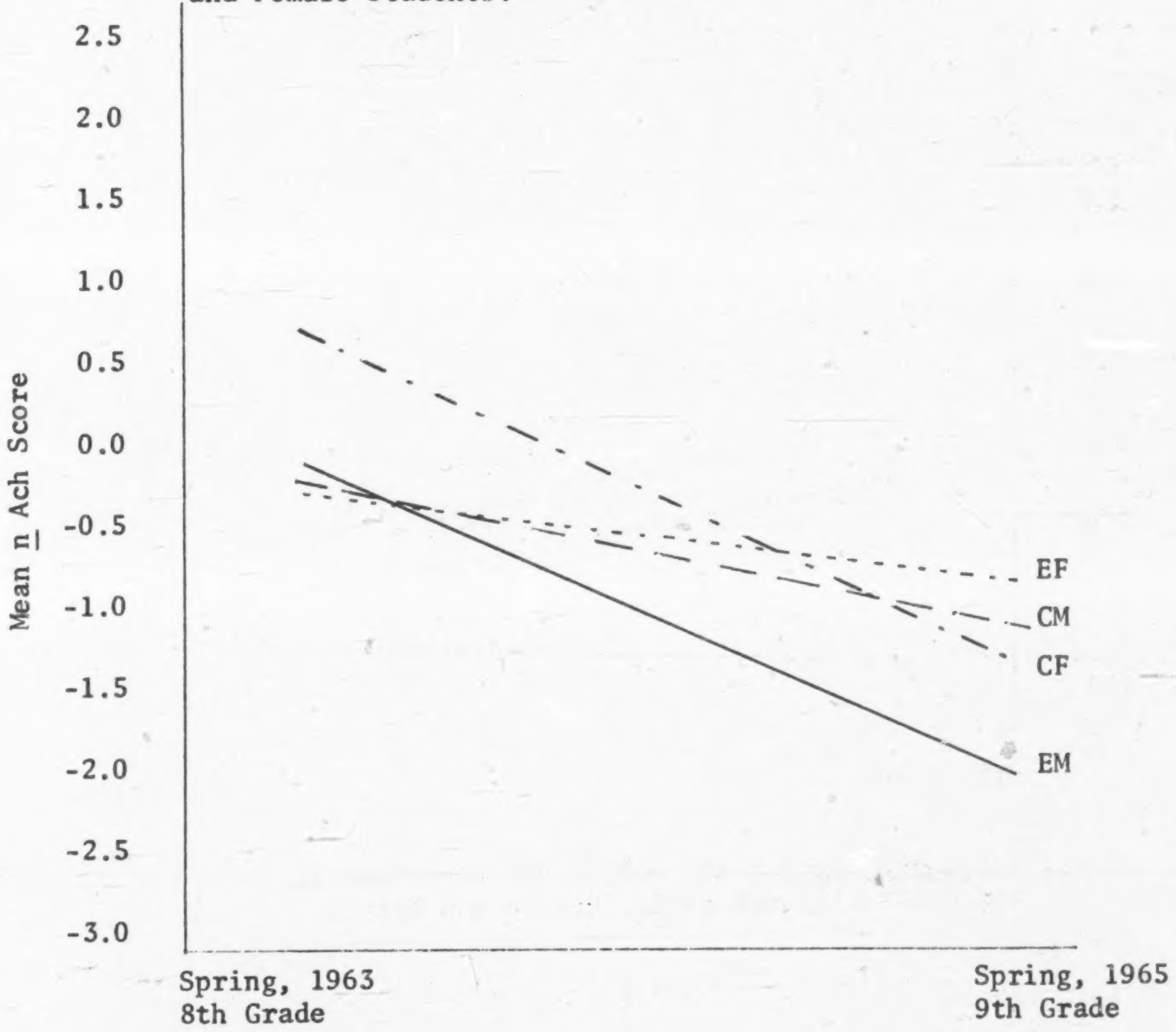

Table 5.4 Mean n Ach Scores for Experimental and Control Groups (Male, Female and Total) in 1965 and 1966.

Spring, 1965 8th Grade	Exp.	Con.	d	t	N
Total	-0.16	0.28	-.44	-1.5	42
Male	-0.05	-0.22	.17	0.38	18
Female	-0.25	.67	-.92	-1.80*	24
Spring, 1966 th Grade					
Total	-1.35	-1.19	-.16	-0.34	42
Male	-2.06	-1.11	-.95	-1.79*	18
Female	-0.83	-1.25	.42	0.58	24
Change					
Total	-1.19	-1.47	.28	0.529	42
Male	-2.00	-0.88	-1.11	-1.693*	18
Female	-0.58	-1.91	1.33	1.781**	24

*p < .10 **p < .05 ***p < .01

Figure 5.3(n Aff) Changes in n Aff from 8th to 9th Grade among CLP and Traditional Male and Female Students.

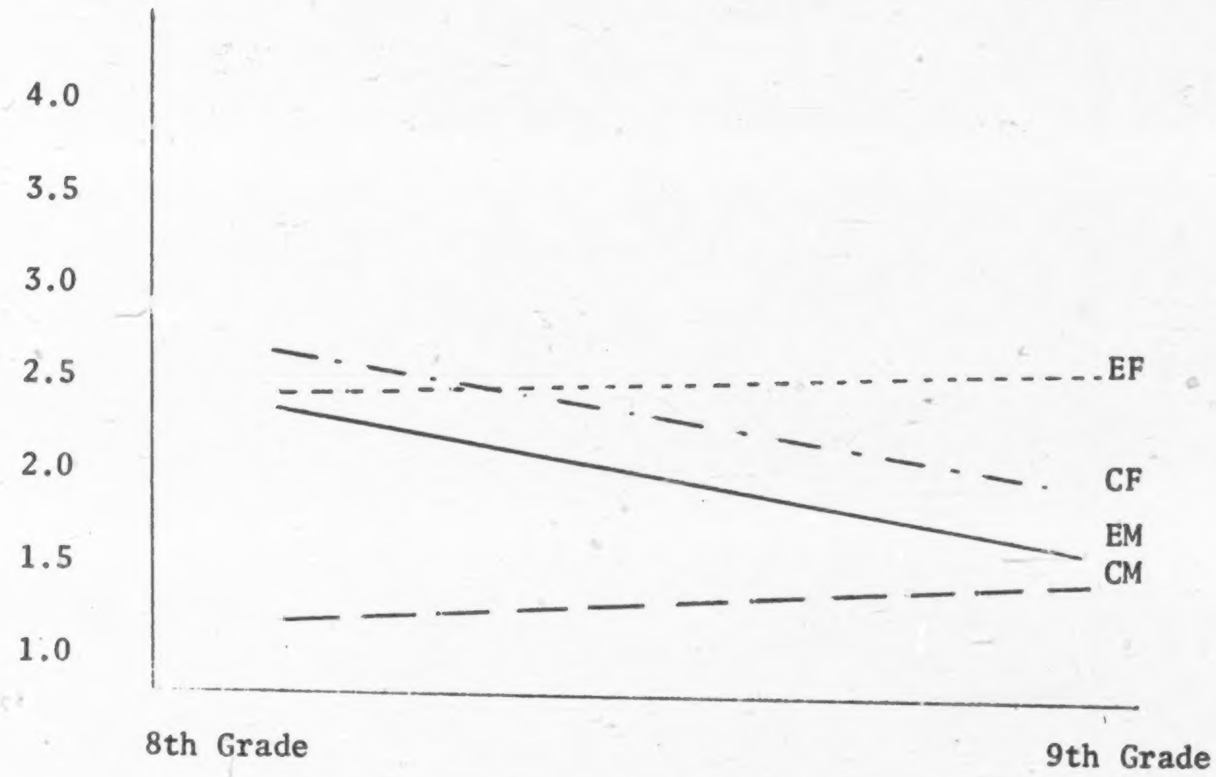

Table 5.5 Mean n Aff Scores for Experimental and Control Groups (Male, Female and Total)

	Exp.	Con.	d	t	N
Spring, 1965 8th Grade					
Total	2.28	1.98	.30	.65	42
Male	2.22	1.22	1.00	1.17	18
Female	2.33	2.54	.21	.42	24
Spring, 1966 9th Grade					
Total	2.00	1.69	.31	.60	42
Male	1.50	1.33	.17	.25	18
Female	2.37	1.96	.41	.48	24
Change					
Total	.28	.28	0	0	42
Male	-.72	.11	-.83	1.09	18
Female	.04	-.58	.62	.66	24

Discussion

The major finding of this study is that students' motivation can be changed by altering the structure of their learning environment. By changing the locus of decision-making, and by changing the teacher's role from opponent to coach and collaborator, the power concerns of students can be decreased. This finding is unusual in two respects. First, there is very little other evidence in the educational research literature suggesting that motives can be changed by the schooling process. Second, when motive change is attempted, the structure of the learning situation seldom, if ever, is the independent variable. Typically, the instructional content is changed or the teacher's style is altered.

The data also indicate that the relationship between structural inputs and changes in motivation are not always simple and direct. Boys and girls responded differently to the CLP and to the Traditional program in terms of changes in n Ach. The girls' n Ach held up much better after the CLP program than the boys' n Ach did. At the most superficial level, it is perfectly reasonable to assume that different types of people will perceive the same situation differently. No learning situation will be ideal for all students. Whether "contracts," programmed instruction, individualized learning, or other modes of teaching are employed, the response of students will vary as a function of many individual differences, e.g., sex, I.Q., attitudes, parental concerns. Although these facts seem painfully obvious, a great deal of educational planning in the country at this time assumes that a new program will be equally beneficial to all students.

In the CLP, for example, it is possible for some students to respond by defining meaningful personal learning goals. For these students, the increased freedom meets their personal needs for exploration. For them it is a delightful way to learn. Other students, however, can view the same "opportunities" as an abandonment by the teachers of their responsibility to teach, a betrayal by their elders to meet their obligation to set standards. This view can breed cynicism and wiley gamesmanship to get away with the best possible marks with the least possible effort. Most likely, there are polar responses to any learning structure. In the Meadowbrook Traditional program, the same type of student who dislikes the CLP might thrive in situations where the teacher sets standards, lectures, and assigns work. Conversely, the students who thrive in the CLP might feel unbearably thwarted and become rebellious in the Traditional program. Something like this seems to be occurring, sure males and females respond in opposite ways to the two programs. Clearly, it is not sufficient to change only the learning structure without also helping to change students' perceptions of those structural changes. This suggests that something like achievement motivation training for students entering the CLP might be an appropriate introduction.

Not only may some students' personalities be incompatible with the CLP, but in practice, some of the CLP goals may be incompatible with each other. To promote creativity, open exploration, and innovative thinking, it is necessary to reduce the penalties for failure, since open exploration does not always lead to important discoveries. Because failure is more likely than success, the consequences for failure must be minimized as much as possible to allow and encourage exploration. Otherwise, students will play it conservatively, and conform to the standards set by teachers in the form of objective tests, essay exams, or standardized examinations with national norms. The Meadowbrook CLP has attempted to solve this problem by grading on effort. If the child tries hard, if he works up to his ability as perceived by the teacher, then he receives an A, whether or not he has succeeded in creating something new or discovered something unique. By definition, this lowering of penalties for failure also decreases the emphasis on external standards. Effort rather than mastery is of prime importance. Regular, concrete feedback on a student's performance measured against objective external standards is less available and less important. Yet, it is these better kinds of cues that can stimulate achievement motivation, and to that degree, a sense of agency.

The shift in grading is a classical trade-off problem. At present it appears that it may not be possible to promote simultaneously a sense of agency and increased creativity. The unsolved problem is how to open up the schooling process for student exploration while at the same time maintaining high expectations and standards for performance. Until some system can be developed to foster both goals together, the choice of emphasis must remain a value problem and an educational policy issue. The choice made by Meadowbrook in the CLP is clear in policy and in effects. It has resulted in a decrease in achievement motivation among the males and, insofar as achievement motivation defines agency, a decrease in agency, as well. It has also resulted in a decreased need for power among males and females.

The data also suggest that more could be done to increase affiliation motivation, if that were a valued goal. Specifically, it would involve introducing a number of team projects, completion of which required the coordinated efforts of all members. Scores or grades, as in athletic team sports, would be shared by all members. From the discussion above, it should be clear that there are potential drawbacks. Students' perceptions of the opportunities for team effort would have to be managed so that it was seen as a chance for group accomplishment and not as a way to coast along on others' efforts. Also, team effort may at times be incompatible with individual initiative (agency) and with the type of group support necessary for creative thinking. In perspective, however, it seems clear that a variety of learning structures could co-exist side by side.

Finally, the limitations of this study should be listed briefly. The data were obtained on the CLP during the second, third and fourth years of its operation, and do not reflect changes in policy and procedures since then. The data pertains only to the incidence of spontaneous thought patterns and goals. Other important educational yields were not studied: attitudes, activities outside of school, scholastic achievement in high school. Perhaps the most serious deficiency as an evaluation of the CLP is the absence of a measure of "creativity." This study did show, however, that the CLP significantly affected several important aspects of motivation. Now it remains to manage these motive changes more effectively by preparing students for new learning opportunities.

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Chapter 6

The Motivational Impact of Individualized Instruction

Alfred S. Alschuler and Margaret Ham

The purpose of this research is to examine the impact of an experimental learning structure on student motivation. Past research indicates that achievement motivation courses for students result in higher academic grades (Burris, 1956; Kolb, 1965) and more serious career planning (McClelland, 1968). Among businessmen, achievement motivation courses have resulted in increased entrepreneurial activity (McClelland and Winter, 1969, in press). A second stream of research suggests that changes in the structure of the learning environment, without explicit training in achievement thought and action strategies, also may have a significant effect on students' achievement motivation. In a 10th grade typing class the structure was changed so that all students had increased personal responsibility for learning and there was a more cooperative relationship between teacher and students. At the end of the course the average typing speed was 66 net words per minute, 56% more than the average of a matched comparison class. Similar large gains in performance were obtained in a restructured 5th grade math class (Chapter 4) in which (1) students were given more decision-making power for their own work, (2) the obstacles to success were located within the student, not in the teacher, (3) students were able to get immediate concrete feedback on their performance to assist them in goal setting. Again, these changes called for personal responsibility from students and a collaborative relationship between teacher and students. In one year the students' average gain on the Stanford Achievement Test of Mathematics was 2.85 years. This is compared to an average gain of .2 years for the same students during the 4th grade, and a gain of .6 years for a comparison 5th grade traditional math class taught by another teacher. The purpose of the present research is to explore and extend these findings (1) by studying a school in which all the courses are restructured as opposed to one class, (2) by studying the impact over a longer period, and (3) by obtaining a variety of yield measures, besides academic performance test scores, e.g., thought patterns, values, attitudes, and activities outside of school.

Alschuler (C9;4) has presented a taxonomy of games which can be used to evaluate the likely impact of different types of learning structures on achievement, affiliation and power motivation. All games have scoring systems, obstacles to be overcome, and methods of making decisions about moves, strategy, and tactics. Differences in scoring systems, locus of decision making, and obstacles determine the motivational character of the game, or in other words, the motivational demands of a learning structure.

At least three types of scoring system may be distinguished. In a "0-Sum" scoring system, the total number of points remains constant. A point for one player automatically means the loss of a point for another player (i.e., a curved grading system). "0-Sum" scoring systems encourage competition, rivalry, and power concerns among students. Weakening the performance of other students is as effective a strategy as strengthening oneself. Under such a system, assisting other students may be detrimental to one's own score. In a "Non-0-Sum" scoring system each participant is free to earn as many points as he can and his score depends only on his performance relative to fixed standards (i.e., an absolute grading system). This system tends to encourage achievement concerns, since greatest value is placed on independent, self-reliant accomplishment, rather than only doing better than other students. A "Shared-Sum" scoring system tends to encourage affiliation motivation since a point scored by one of the players is a point for all. "Shared-Sum" scoring systems, found frequently in team sports, are rarely used in the classroom.

The locus of decision making is another important aspect of a learning structure that cues in different motives. If the teacher has control over all the important decisions in the classroom such as the pace, content, quantity of work, and the criteria for grading, then students are forced to comply with or rebel against a pre-established format. This tends to encourage power concerns. However, if students make many of these decisions, then personal responsibility, self-reliance and independence are encouraged, i.e., achievement motivation. If decisions are made by a group or team, affiliation concerns become more salient and valuable.

A third aspect of structure influencing motivation is the nature of the obstacles to success. If the teacher makes most of the important educational decisions for students or fails to make his expectations explicit, then the teacher himself becomes the major obstacle to success and power concerns are stimulated. If the teacher is not in the role of major decision maker, a more collaborative coaching relationship between teacher and students can be developed, thus avoiding the role of the teacher as "the opposition." In this situation, the major obstacle is the material to be mastered and the personal skills of the student necessary for mastery. Achievement, rather than power, is the most valued motive.

With this theoretical framework in mind we were interested in finding an educational setting where these types of structural changes had been introduced and where we could obtain a variety of yield measures to assess the motivation impact of the innovations.

The Duluth Individualized Instruction (II) Program

The basic aims of the II program are stated by Thorewald Esbensen, the principal organizer of the new system of instruction in Duluth.[1]

> We should emphasize that in our individualized programs we have been after something more than basic academic achievement--important as this is. It is our contention that over the years, schools have not really done a very satisfactory job of preparing students to become life-long learners...
>
> We assert that schools traditionally spend so much time supervising students that the natural curiosity of a young learner gradually becomes a dependent sort of thing, often learning almost entirely on a steady stream of directions and exhortations from the teachers. Once this sad condition has been achieved, of course, a school can quite correctly claim that only a few of its students can be depended on to engage in independent inquiry.
>
> We have felt that an important measure of the success of our individualized programs would be the extent to which students in the programs developed the ability to undertake and complete a variety of independent learning activities.
>
> (Esbensen, 1966, pp. 24-45)

This position underlies the structural changes in the II program and indicates one aim of the program to develop personal responsibility and initiative in students, characteristics which are intrinsic to achievement motivation.

Structure of the II and Traditional Programs: The most salient feature of the II program is the contract system. Each subject area is divided into a number of learning units or "contracts." Each contract specifies the material the student is expected to learn, the resource material he may use in preparing for the contract test and how the student will demonstrate mastery of the material. The following contract used in a 7th grade social studies class illustrates this format.

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[1] Several long discussions with Mr. Esbensen during the summer of 1967 also supported our impression that the II constituted an achieving structure.

In March, 1968, the writer visited the Duluth School System interviewing teachers and observing classes on both the Individualized Instruction and traditional programs to identify more precisely what structural changes were made to implement these goals. Data was collected on those schools selected for our research: Washington Junior High School and the eight elementary schools within its boundaries.

Number 44
Date
Social Studies

CRITERION PERFORMANCE

GIVEN FIFTEEN TRUE AND FALSE TEST ITEMS DEALING WITH RUSSIAN EDUCATION AND GOVERNMENT THE STUDENT WILL BE ABLE TO DISCRIMINATE BETWEEN THE TRUE AND FALSE ITEMS

SAMPLE TEST ITEM

____1. ALL CHILDREN OF THE USSR MAY GO TO COLLEGE

RESOURCES

____1. TEST 221-222

____2. FILMSTRIP 34

____3. FILMSTRIP D-5, D-2

____4. SINGLE CONCEPT FILM

____5. WORKSHEET 44

____6. READ WHAT IS COMMUNISM, pp. 54-60.

____7. TEST 44

While the "criterion performance" describes the assigned area, the worksheet provided with each contract and the questions in the test give the student an operational definition of the material for which he will be held accountable. A section of the worksheet and related test items for Social Studies contract 44 (given above) is presented below.

Worksheet 44

The Soviet Union is made up of (20)________ republics, the biggest of which is the (21)________ ________________ ________. These republics are members of the Communist Party; they meet once a year at the (22)________________. The actual rule of the country is in the hands of a small group of men known as the (23)____________________________.

Test 44

True or False
____2. There are 14 republics in the Soviet Union.
____7. The ruling elite of the Soviet Union form the political body called the Presidium.
____14. The annual meeting of the Communist Party is called the Party Congress.

Essentially, the contracts provide the student with a complete, self-instructional learning unit. These learning units do not differ greatly from the traditional curriculum in the content covered, the kinds of exercises required, or the nature of the tests given. The major differences lie in freeing students from proceeding through classwork--exercises, discussions, movies, tests--as a group. Students are expected to work at their own pace by using the audio-visual aids, by doing the reading necessary to complete the contract exercises, and by passing the contract test. However, each student's progress and pace is continually monitored by the teacher. In March, the number of contracts completed by individual students in one class ranged from 7 to 70, indicating the great difference in pace among students and suggesting the diversity of material being worked on in one classroom at the same point in time.

1. Scoring System

There appear to be no systematic differences in the scoring systems used by II and traditional teachers. Most teachers in both programs included some aspects of an absolute scoring system (Non-O-Sum) and some aspects of a curved system (O-Sum). For example, some traditional teachers graded individual tests against fixed standards, but then curved the grades for the marking period, while others graded on the curve for some assignments, used fixed standards for others and then averaged all grades for the semester mark. Some teachers on the II indicated that they set different standards intuitively for students with different ability levels. To our knowledge, no teachers on either program used Shared-Sum scoring systems.

While there are no systematic differences in scoring systems, there is a difference between II and traditional classes in the material counted towards a student's grade. In the II classes the number of contracts completed and the performance on contract tests provide the basis for a student's grade. In traditional classes, however, homework, written papers, workbooks and other non-test marks count toward a student's grade in addition to a student's test scores. In this sense, the traditional program is less test oriented than the II program. Traditional students who typically do poorly on tests can turn to other work to improve their grade while II students seldom have a comparable number of alternatives.

2. Locus of Decision Making

Ideally, the II as described by Esbensen entails a major change in the locus of decision making. While students are given more responsibility under the II than under the traditional program, the amount of change varies from class to class. Most decisions relating to the use of class time are made by students: students may choose to work alone or with other students; often they can decide the order in which they will proceed through the resources on a contract; and in some classes they can decide which of the resources they will use and which they will skip. In most classes students go through the contracts sequentially with only occasional freedom to skip a contract or change the order. The most consistent change is that the student can regulate his own pace of work rather than moving through class work in lockstep with his classmates. Teachers do put pressure on students concerning their pace of work by prodding a student on if they feel he is working slowly or by trying to hold back a student who is rushing through work with little regard to quality. However, most teachers and students feel that the real decision on pace rests with the student.

While these student decisions depart from the traditional options, most of the major decisions concerning the content of the curriculum, the goals of the class, and the nature of the grading system remain the prerogative of teachers alone and closely resemble the traditional structure. Traditional teachers indicated that most decisions relating to the use of class time, course content, goals, grading, pacing, and so on, are made by them. When asked what decisions or choices are made by students, most indicated that occasionally students are able to select an outside project on their own, choose a paper topic from a list of suggested alternatives, decide what they would like to do during class time on a particular day; but it is clear that student decisions are limited to special occasions or to extra work and not built into the day-to-day working of the classroom.

This difference in "locus of decision making" is reflected in the degree of students' freedom in the classroom. In II classes students may move around freely to use the various learning aids in the room, including other students. In some classes students are explicitly encouraged to work together in going over resources and worksheets for the contracts. Collaboration is usually discouraged and often formally prohibited in traditional classes. Further, while the II teachers differ in the degree to which they allow horseplay and non-academic conversations to go on in class, all felt that students could not be expected to work intently for 55 minutes every class period. They expected and allowed some activity unrelated to class work. In traditional classes, while such activity is also expected, it is generally viewed as troublesome, because the teacher must maintain unified class learning. This same behavior is less of a problem in the II program.

3. Obstacles to Scoring

If a teacher makes almost all of the decisions in the classroom and does not make his expectations for students explicit, the teacher himself, according to our theoretical framework, becomes an obstacle to student success. Students are required to psych-out teacher demands, and emphasis is placed on student compliance rather than on student responsibility and initiative. In allowing students to make decisions on pacing and in making the demands of each learning unit explicit, the II program has decreased the importance of the teacher as an abstacle to student success.

In traditional classes, teachers retain most decision making power and the criteria for doing well are not stated as clearly as those offered through contracts on the II. Often, traditional teachers saw and resented their role as policemen. Several II teachers, moreover, simultaneously expressed their relief in being free of the policeman role. Student reactions to the non-disciplinarian role of II teachers varied. Some students were relieved, happy and content to work on their own at their own pace. Other students were distracted by the constant low-level noisy activity in class and resented the lack of class cohesion and learning in unison.

In the II classes teachers had more opportunities for developing close personal relationships and having longer conversations with individual students. These closer relationships were not desired by all II students and teachers, so they did not always occur. Many teachers in the traditional program saw the possibility of individual discussions as a distinct advantage of the II and commented on the problems of having to address remarks to the class as a whole. They felt that they did not know their students well personally. On the other hand, some II teachers said they missed the class as an audience. Thus, for students and teachers in both programs, there were advantages and disadvantages in the teacher role defined by the learning structure.

4. Hypotheses

Although the stated aims of the II program are consistent with increasing achievement motivation, the structural features of the II program do not uniformly implement this aim. A mixture of 0-Sum and Non-0-Sum scoring systems are used in both traditional and II programs. II students had greater latitude in determining their own pace, but could demonstrate their mastery of the material only through tests. For both traditional and II students the teachers made the major decisions about course content, the grading system, etc. On the whole there does not appear to be a striking difference in the degree to which the structures of the two programs promote independent activity and achievement motivation.

The major difference between the programs is the altered student-teacher relationship. Since the contracts direct student learning, teachers are freed to engage in more frequent individual coaching. The II structure provides fewer cues and creates less need in students to influence the teacher as an obstacle or condition to success, i.e., power motivation should decrease.

Although there are more opportunities in class for establishing and maintaining friendly relationships with teachers and other students, affiliation motivation is not clearly demanded by the learning structure; there is no Shared-Sum scoring system, team contracts do not exist and team decisions obviously are not required. While some students benefited from working with fellow students, others found this collaboration a distracting and noisy obstacle to their own progress in class. Thus, no unequivocal prediction can be made about the impact of the II structure on students' affiliation motivation.

The preceding discussion makes it clear that the II program aims have not been implemented completely or consistently at present. Therefore, this research cannot be viewed as a final test of the II program. Instead, it is an interim evaluation after the first two years of its existence. Hopefully, data on the motivational yields will be useful in modifying and improving the system in the future.

Sample

The sample for this study consists of an experimental group of 54 students who participated in an II program in the 6th and 7th grades and a matched control group of 54 students who were in a traditional program in both grades.* All students attended Washington Junior High School in the 6th grade. However, II students attended different elementary schools than those in the traditional program. Of the 10 elementary schools feeding into Washington Junior High School, two placed their entire 6th grade on the II program (Franklin and Nettleton), one had a hybrid II program, and the other schools operated under the traditional program. Since the II elementary schools were selected on the basis of servicing a low-income population, it was important for us to reduce this possible confounding effect. In the first stage of sampling, we selected traditional elementary feeder schools which were most comparable to the two experimental schools, using data on median income of families within each of the elementary school boundaries (see Table 1 below). Of the traditional elementary schools, Emerson, Jefferson, Munger, and Grant were selected to provide our control population. In addition to sharing medium income, these four schools are geographically closest to the two experimental schools. School personnel, with experience in the Washington District, also concurred with our choice of control schools as being most comparable to Franklin and Nettleton.

Table 6.1 Median income, and curriculum program for schools feeding into Washington Junior High School.[1]

Elementary School	Median Income[2]	Curriculum
Nettleton	4,057	II
Franklin	4,202	II
Emerson	4,434	Trad
Munger	4,446	Trad
Jefferson	4,620	Trad
Grant	5,543	Trad
Lowell	5,879	Trad
Birchwood	5,930	Trad
Kenwood	6,101	Trad
Park Point	6,293	Trad

[1] Information was provided by Harris Miller of the Rand Council, University of Minnesota in Duluth.

[2] Median Income was compiled from 1960 Census data, selecting those census tracks which most closely fit school boundaries for each school. This provides only a rough measure of median income for each school since individuals with no children in the schools are included in the measure.

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*Initially we tested 2,800 students in two junior high schools and two senior high schools in Duluth. However, we were forced to reduce the sample to 108 students in Washington Junior High School, because no good comparison groups were available at the other three schools.

In the second stage of the sampling, background data was collected on all 7th grade students at Washington Junior High School who had attended one of the six elementary schools chosen. From past research, it was clear that we needed to match students on sex, IQ, scholastic achievement, and age. While we also wished to match on social class, there was no reliable information available at the time of matching. Data was collected on father's occupation at a later date to check on the comparability of the sample on this factor.

Before proceeding with matching, subjects were excluded from the sample who 1) transferred into the 6th grade more than two months after the school year began, 2) transferred into the opposite instructional program in the 7th grade or 3) lacked test information on the IQ test, the Iowa Test of Basic Skills or the Thematic Apperception Test. Each of the 55 remaining students in the experimental group (II) was then individually matched with one of the 85 subjects in the control population (Trad.) on the following:

1. Sex: All subjects were matched.
2. IQ: Composite scores on the 4th grade Lorge Thorndike Test of Intelligence were used. This test, given in March 1965, was the latest IQ test given before entry into the experimental program. All matches were within 6 points.
3. Achievement: Composite scores on the 5th grade Iowa Test of Basic Skills were used. This test, given in March 1966, was the latest achievement test given before entry into the experimental program. Matches were within 7 points with 6 exceptions: three of 7 points and one each of 8, 11 and 12 points.
4. Age: Matched subjects were within one year with one exception of 16 months.

Insert Table 6.2 about here

These statistics indicate a very close match on I.Q. and age for the male, female, and combined samples. The differences on the ITBS, while small, are statistically significant for both the male and combined samples. This initial difference in achievement level will limit our analysis to differences in achievement gain between the experimental and control groups rather than differences in absolute achievement level as measured by the ITBS.

In March, 1968, data was collected on father's occupation to check the comparability of our matched pairs on social class. Table 3 presents the distribution of occupations in the experimental and control groups. In compraing the occupational levels for the 39 pairs on which complete information was available, the sign test revealed no significant differences for males, females, or the combined sample.

Table 6.2 Mean IQ, ITBS, and Age for II and Traditional Samples (Male, Female, and Total)

		II	Trad	D	t[1]	p[2]
4th Grade I.Q.	Total (N=54)[3]	100.09	100.13	.037	.106	N.S.
	Male (N=28)	97.54	97.21	.321	.659	N.S.
	Female (N=26)	102.85	103.27	.423	.841	N.S.
5th Grade ITBS[4]	Total (N=54)	5.55	5.68	.122	2.392	.020
	Male (N=28)	5.35	5.54	.186	2.382	.025
	Female (N=26)	5.77	5.82	.054	.844	N.S.
Age (in Months)[5]	Total (N=54)	151.50	151.74	.241	.262	N.S.
	Male (N=28)	152.93	152.86	.071	.052	N.S.
	Female (N=26)	149.96	150.54	.577	.468	N.S.

[1] t values are based on the formula for the difference between correlated means

[2] p values are two tailed

[3] N = number of matched pairs

[4] ITBS scores are presented in the form of grade equivalents. A score of 5.4 is interpreted as an achievement level expected of a student in the 4th month of the 5th grade (based on a 10 month school year).

[5] Age as of September, 1967 (fall of 7th grade)

Table 6.3 Occupational Distribution of Fathers of II and Traditional Students[1]

Occupational Level	II Program	Traditional Program
1) Professional & high Administrative	2%	0%
2) Managers, executives, & officials	2%	8%
3) Inspectional, supervisory, & high-grade non-manual	10%	6%
4) Clerical, sales, & lower-grade non-manual	17%	23%
5) Skilled Craftsmen, foreman	31%	27%
6) Semi-skilled operatives	24%	21%
7) Unskilled	10%	8%
8) Unemployed	5%	6%
TOTAL %	101%	99%
Total for whom occupational information was available	42%	48%
Retired (no further information)	3%	0%
Deceased (no further information)	9%	3%
Occupation Unscorable	0%	3%

[1] Occupations were classified according to a modification of the Hall-Jones Scale, British Journal of Sociology, 1950, No.1, pp. 35-55.

In summary, the sample provides a well-matched group of students on the II and traditional programs. While there were small and significant differences on the ITBS (equalling 2 months difference for males, and one month for the entire sample), the II and traditional samples are almost identical on age, I.Q., and social class. To get this match, it was necessary to restrict outselves to Washington Junior High School. Further, it should be noted that our sample is comprised predominantly of students from low-income homes, and therefore is not representative of all students participating in the II and traditional programs. The impact of these programs for other income groups may be different, and cannot be determined from our results.

Measures

The testing was conducted in September, 1967 after students had been on the experimental program for one year, and again in March 1968 after a year and six months on the program. Data was collected to measure the impact of the II program on three types of motivational yields--thought patterns, attitudes, and actions.

1. Thought

The Thematic Apperception Test (TAT) was used to obtain a sample of students' thought patterns. This test was selected since it is the standard method for eliciting fantasy that can be scored for the spontaneous frequency of achievement, affiliation and power concerns (McClelland, et al., 1953). The fall TAT consisted of six printed pictures in booklet form; young boy at desk, staring into space; boy and girl in cap and gown facing each other in a doorway; man at a drafting table looking at a family photograph; man talking to a young boy sitting on a farm fence; man and woman on the high trapeze; and, a boy in the foreground with vague operation scene in background.

In the spring, a different set of six pictures was used and presented to students as slides rather than in printed form. The six pictures were: girl with books in arm standing in front of a farm plowing scene; group of 7 young men talking around a large table; older man and young boy looking at paper on desk; two men in an old workshop setting; and a line drawing of a girl in foreground and nurse at patient's bedside in background. The changes in format and content were made in an attempt to counteract the usual reduction in TAT raw scores in short-term re-test situations. These revisions, however, limit our analysis of change to an investigation of the difference in the relative position of experimental and control students in the fall and spring, and do not allow analysis of individual absolute change scores, i.e., standard scores are used to measure change.

Both sets of TAT's were scored for achievement motivation (n Ach), affiliation motivation (n Aff), and power motivation (n Power) according to the scoring systems given in Atkinson's et al., Motives in Fantasy, Action and Society (1958). The fall TAT's were scored for n Ach by one of the authors (Margaret Ham). Before scoring, she obtained a reliability of .80 as measured against the expert scoring on the first 30 stories in Atkinson (1958). All other motive scoring was done by experts whose coding reliability is checked regularly. A different coder was used for each of the three motives, but each coder scored both fall and spring tests (with the exception of n Ach).

2. Attitudes

The second type of yield data consists of seven measures selected to tap attitudes related theoretically to achievement motivation and empirically to academic performance. Data on each of the measures were collected in fall and spring of the 7th grade by asking students to agree or disagree with a series of statements about themselves (see Appendix for a copy of the test and scoring systems used).

Value of Achievement (v Ach). This scale measures an individual's perception of the value he places on achievement through his responses to nine statements such as: "I feel that my future peace and self respect depend upon my accomplishing some notable piece of work." and, "I enjoy relaxation wholeheartedly only when it follows the successful completion of a substantial piece of work." This scale, a modification of Murray's v Ach scale, is reported in de Charms, et. al. (1955). Although v Ach and n Ach are theoretically related, typically they do not correlate highly with each other. They reflect different aspects of achievement concerns.

Debilitating (Test) Anxiety (DA). This ten-item scale created by Alpert and Haber (1960) measures an individual's perception of the extent to which anxiety interferes with his performance in achievement test situations. Students are asked to agree or disagree with statements such as the following: "The more important the examination, the less well I seem to do," or, "In a course where I have been doing poorly, my fear of a bad grade cuts down my efficiency." Our interest in this scale follows its use by Atkinson and Feather (1966), as a measure of the individual's tendency to avoid failure. Atkinson and Feather sum this negative tendency with n Ach, (the positive tendency to approach success) to obtain the resultant tendency toward achievement-oriented actions. From this theoretical perspective a decrease in DA is as important as an increase in n Ach.

Internal vs. External Control of Reinforcement (IE). This scale measures an individual's perception of the relationship between his own behavior and success or failure. An internal orientation characterizes a person who believes his own actions determine whether or not he will succeed. An external orientation, however, refers to the expectation that one's successes or failures occur as a result of external causes, i.e., chance, fate, luck. The IE scale consists of 12 statements, such as "Success almost always turns out to be the result of perserverence and ability," and "Making friends is largely a matter of being lucky enough to meet the right people." Our use of this measure developed by Rotter (1962) stems from its theoretical relevance, its high empirical correlation with DA (Lefcourt, 1966) and its correspondance to the Coleman items (see below) which explain much of the variance in academic performance among lower class subjects (Coleman, 1966).

Control of Environment (COE). The Control of Environment Scale, used in the Coleman Report (1966), is identical conceptually with the Internal vs. External Scale described above. An individual high on this scale believes he can affect his environment through his own behavior, while an individual low on the scale feels that what happens to him is determined by fate, chance or luck. The three items that make up this scale are as follows: "Every time I try to get ahead, something or someone stops me," "People like me don't have much of a chance to be successful in life," and, "Good luck is more important than hard work for success." This measure was included in addition to IE, so that we could relate our findings specifically to those of the Coleman Study.

Origin-Pawn (OP). This scale, developed by Alschuler, is related to the COE and IE scales. In contrast to perceptions of what controls reinforcement (IE), this scale reflects students' perceptions of what stimulates them to action, and includes several items specifically related to school activities. The scale items get at whether students see themselves as originating their activities (Origins) as in acting in response to demands, assignments and requests (Pawns), e.g., "I'd rather watch TV than try to think of something new to do," "I always volunteer answers in class without being called on." At the present time there is no empirical evidence for the validity of this scale.

Self-Esteem (SE). The Coleman Report reported that for children from advantaged homes, self-esteem correlated most strongly with the variance in academic performance. Coleman's measure of self-esteem related largely to academic situations. While the items on the Janis Scale (Janis, 1954), used here refer to one's self-esteem in more social situations, it may produce similar results. Also, the scale is relevant to the affiliation yields of the experimental curriculum. An illustrative item is "I seldom have fears that my actions will cause my friends to have a low opinion of me."

Subjective Goal Discrepance. Inclusion of this measure created by Mahone (1966) stems from research which shows that individuals with high achievement motivation tend to set moderate-risk goals. Those individuals with low achievement motivation tend to take either very high or very low risks. The Subjective Goal Discrepancy Index provides an attitudinal measure of risk-taking behavior. It measures the difference between an individual's estimate of his own ability and his estimate of the ability required by his occupational choice. For example, suppose a student estimated that 75% of his classmates were below him in ability, and feels that students in the top half of his class have enough general ability to be a newspaper reporter, his stated vocational goal. His discrepancy score would be -25. The median of the distribution of discrepancy scores (regardless of sign) was used to divide the students into two groups for our analysis: high and low discrepant. Achievement-oriented risk-taking ability should be reflected in low discrepant choices.

3. Action

Our third area of interest was the motivational impact of individualized instruction on the actions of students. Increases in thought patterns and attitudes may be reflected in activity both in school and outside of school. In addition to school attendance and achievement records, we collected data on game playing and use of leisure time to investigate whether any motivational yields had generalized to activity outside the classroom.

Attendance: The number of absences during the first 2/3 of the 7th grade (through March, 1968) were recorded for each student. This measure is admittedly crude since it includes both excused and unexcused absences; however, it is reasonable to expect that absences due to illness would balance out for experimental and control groups. II teachers felt that the program would make school a more enjoyable place for students, and consequently, that attendance would be improved for II students.

Achievement: Composite scores on the Iowa Test of Basic Skills (given each year in March) were gathered for 5th, 6th, and 7th grades. The composite score is an average of test scores on vocabulary, reading, language skills, work-study skills, and arithmetic. Scores were recorded in grade equivalent form, so that a score of 5.4 indicates an achievement level expected of a student in the fourth month of the 5th grade (based on a 10 month school year).

Risk-taking behavior: An addition game was used to allow us to study students' risk-taking behavior. Like the measure of Subjective Goal Discrepancy, inclusion of this game is based on past research which indicates that individuals with high n Ach tend to set moderate-risk goals, while those with low n Ach tend to set either very high or very low-risk goals. Since students in the experimental program were involved in setting their pace of work on contracts, we were especially interested whether this experience had generalized effects on risk-taking behavior.

The addition game consisted of three rounds of addition problems with 12 problems (ranging from one to twelve columns of figures) in each round. Students were asked to estimate the problem they could complete within 30 seconds, and after making this bid were given 30 seconds for the problem. On each succeeding round, subjects had the opportunity to evaluate their prior performance and to set a new bid for the present round. The scoring system elaborates possible moves consistent with a moderate-risk strategy. Deviations from this strategy are scored as wrrors of the three following types: a "chicken" error if the subject set an overconservative goal (e.g., staying at the same level problem for three rounds with successes on each round); a "dare" error if the subject set an overambitious goal (e.g., jumping from n to n+4 in one round); and a "wrong direction" error if the subject set a goal in the direction opposite to what the result of the previous trial seemed to indicate (e.g., dropping to n-1 after success at n). No errors indicate moderate risk-taking behavior. (See the Appendix II for a copy of the test and a detailed scoring system.)

Activities Survey*: This questionnaire, given only in the spring of 7th grade, was included to measure students' voluntary participation in activities outside of school. By looking at leisure time activities, we believed we could obtain a good indication of the kinds of personal choices students made without the demands or expectations of others. The six sections of the questionnaire, developed by Rodewald (1968) are described below. (See AppendixII for a copy of the survey--boys and girls form--and a copy of the scoring system.)

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*In general, the Activities Survey obtains information not obtainable by any other measure described in the 6th Mental Measurements Year Book. Other surveys reflect attitudes, neurotic activities, rare accomplishments or highly stable behavior, e.g., number of years attending church. The Activities Survey does not have extensive empirical evidence to support its validity. However, because of the need for this type of inventory and the need for further scale development and validation it is presented and described in full in the appendix.

Hobbies Checklist: Students were asked to go through a checklist of 28 hobbies (30 for girls) and indicate how many times in the past two weeks they participated in the activity. In addition, students were asked to indicate those hobbies which they usually did alone. Hobbies are closely related to achievement motivation since they require initiative and involve an active pursuit of personal satisfaction through developing a skill or craft or working on creative expression. Implicit in such activity is competition with oneself or with a standard of excellence. We would expect those students with greater involvement in achievement-oriented activities to check more hobbies listed or show more frequent involvement in those activities checked than those students with less achievement action orientation.

Group Activities Checklist: This section contained a list of activities intended to represent affiliation-oriented actions: those focusing on interaction with others. Again, students were asked to indicate how many times in the past two weeks they had participated in any of the activities. We expected that those individuals who have greater participation in affiliative-oriented activities will check more of the activities listed or indicate more involvement in those activities checked than individuals with less participation in affiliative activities.

Work: Data was collected on work experience of students in both programs. While students may have been primarily motivated to get jobs for economic reasons, nevertheless actually acquiring and maintaining a job does require initiative and personal responsibility, especially for a 7th grade student. These characteristics are part of the conceptual elaboration of achievement motivation, and we therefore expected that students oriented towards achievement activity would be more apt to have a job, and more apt to show initiative in getting a job. As a measure of initiative in getting a job, students were asked how they found out about the job and how they finally got the job. Scores from these two questions were combined for a total measure of initiative.

Saturday Scorecard: In this section students were asked to fill in an hourly record (covering 24 hours) stating where they were, what they were doing, and with whom they were doing it. Saturday was selected because it is usually the day that teenagers have most choice concerning their activities.

The typology used in coding the Saturday Scorecard was constructed from information on the type of activity participated in and the individuals involved in the activity. Four types of activities were distinguished: 1) Purposeful activities such as working on hobbies, doing homework, etc., 2) Pastime activities oriented toward relaxation, entertainment, or affiliative goals (going to movies, "goofing around" with friends, etc.), 3) Neutral activities such as eating, doing required chores, etc. and 4) Unknown or unscorable activities which included those which were insufficiently described to be placed into one of the first three categories.

To investigate participation in achievement-oriented activities, we will look first at the proportion of hours spent in purposeful activities. Two measures will be used to indicate involvement in affiliative activity; the proportion of hours spent in both purposeful and pastime activity with others.

Results

The results will be described in three sections representing the types of motivational yield: thought, attitudes, and action. Within each section, the effects of the II program are presented separately for males and females since research on achievement motivation consistently shows sex differences. Similarly, the motivational impact of the II program may differ for males and females.

The following table summarizes the results of the II program in all three yield areas for males and for females (Table 4). Data in the table are presented in three columns, for the fall (September, 1967), for the Spring (March, 1968), and for the change between fall and spring. Data on three of the action measures are not presented in the summary table because they were not amenable to this tabular format. These results are presented in the action section (See below)

Insert Table 6.4 about here

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1. Thought

After one year on the II program there were no significant differences between II and traditional males in n Ach and n Aff. There is a trend (not statistically significant) showing II males lower in power concerns than traditional males. In the spring of the second year again there were no significant differences between II and traditional males on any of the three motives. The earlier trend in n Power data did not reappear. The differences in motive change between II and traditional males were not significant.

For the females, there were no significant differences between II and traditional students in the three motives after one year on the program, although II females tended to be lower in both n Ach and n Power. By the spring of the second year, the girls in the II program were significantly lower in n Ach ($t + 2.381$, $p < .025$, two tailed). Note the same trend appeared for boys. II girls also remained lower in n Power at a non-significant level. In the spring there was no difference in n Aff and there were no significant differences in mean change on any of the three motives.

When the males and females in the two samples are combined, the difference in n Power is significant in the fall of seventh grade

Table 6.4 Shifts in Motivation Level from Fall to Spring in 7th Grade by Instructional and Sex Groupings

		Males (N = 28)			Females (N = 26)		
		Ind. Instr.	Traditional	Diff. (II-T)	Ind. Instr.	Traditional	Diff. (II-T)
Mean _n_ Ach	Fall	2.32	2.18	.14	-.27	1.35	-1.62
	Spring	.68	1.82	-1.14	2.08	5.12	-3.04*
	Diff.(S-F)	-1.64	-.26	-1.38	2.35	3.77	-1.42
Mean _n_ Power	Fall	1.39	2.14	-.75	1.54	2.85	-1.31
	Spring	1.64	1.89	-.25	1.61	2.42	-.81
	Diff.(S-F)	.25	.25	.50	.07	-.43	.50
Mean _n_ Aff	Fall	3.57	3.68		5.27	4.31	
	Spring	1.64	1.79		4.65	4.54	
	Diff.(S-F)	-1.83	-1.89	.06	-.62	.23	-.85

*$p < .10$

($t + 1.890$, $p < .04$) and approaches significance in the spring of seventh grade ($t = .977$, $p < .17$). At both times the II students are lower in n Power than the traditional students as predicted.

Insert Tables 6.5 and 6.6 about here

An analysis of variance was performed on change in each of the three motives between Fall and Spring using I.Q., sex, and school program as the variables. There were no significant results on change in n Power or n Aff, however, the F for n Ach (2.82) was significant at the .01 level. There was a significant first order effect with females showing significantly greater increases in n Ach than males. See also Table 4. Also, the interaction between program and I.Q. was significant at the .05 level. The difference in the amount of change in n Ach between the II and traditional students was most pronounced for the low I.Q. students and least pronounced for the high I.Q. students.

2. Attitudes

In the beginning of seventh grade there were no significant differences in any of the seven measured attitudes of males. See Table 7. In the spring, however, II males showed significantly higher debilitating test anxiety and significantly lower self-esteem. The comparison of change in attitudes between fall and spring showed a significant difference on debilitating test anxiety ($t = 2.454$, $p = .022$, two tailed) with II males increasing and traditional males decreasing on this measure. Self-esteem decreased in II males while it increased in traditional males, and the difference in change approached significance ($p = .165$).

For the females, the results from the fall tests (7th grade) also show no significant difference on any of the seven attitudinal measures. None of the attitude measures showed a significant difference in the spring of the seventh grade either. While females were not significantly different from II females in Value of Achievement at either the fall or spring testing, comparison of change scores in v Ach between fall and spring yielded a significant difference ($t = 2.155$, $p = .043$, two tailed). This seeming inconsistency is attributed to the finding that a reversal occurred in the relative positions of II and traditional females on v Ach, with traditional females valuing achievement less and II females valuing it more as compared to their earlier scores. No other change score comparisons approached significance.

Insert Table 6.7 about here

Table 6.5 Analysis of Variance on n Ach Change from Fall to Spring[1]

Source	df	MS	F
I.Q.	2	1.19	
Sex	1	24.43	18.7**
Program	1	3.98	
I.Q. x Sex	2	1.97	
I.Q. x Program	2	0.05	27.0*
Sex x Program	1	0.23	
I.Q. x Sex x Program	2	2.66	

[1] Overall F = 2.82, significant at the .01 level. Ten cases were dropped to equalize I.Q. groupings for males and females. Resulting N = 100.

*$p < .05$

**$p < .01$

Table 6.6 Mean Change in n Ach from Fall to Spring by I.Q. and Program (based on cell means from the Analysis of Variance)

	I.Q.		
Program	Low	Med	High
II	-.17	-.06	-.37
Traditional	.29	.36	-.06
Difference in Mean Change	-.46	-.42	-.31

Table 6.7 Shifts in Attitudes from Fall to Spring in 7th grade by Instructional and Sex Groupings

		Males (N = 26)			Females (N = 26)		
		Ind. Instr.	Traditional	Diff. (II-T)	Ind. Instr.	Traditional	Diff. (II-T)
Mean Ach Values	Fall	3.16	2.15		2.09	3.64	
	Spring	2.00	2.04		2.52	1.48	
	Diff.(S-F)	-1.16	-.11	-1.05	.43	-2.16	2.59**
Mean I-E Score	Fall	1.16	1.26		1.58	2.28	
	Spring	1.89	2.15		2.80	2.73	
	Diff.(S-F)	.73	.89	-.16	1.22	.45	.77
Deb.Test Anxiety	Fall	1.84	2.19		.00	2.00	
	Spring	2.82	-.81	3.63***	1.36	2.73	
	Diff.(S-F)	.98	-3.00	3.98**	1.36	.73	.63
Mean Origin-Pawn	Fall	.08	.26		1.83	2.84	
	Spring	2.21	.85		2.88	2.73	
	Diff.(S-F)	2.13	.59	1.54	1.05	-.11	1.16
Self Esteem	Fall	.36	.41		73	.64	
	Spring	-.46	1.04	-1.50**	-.32	-.16	
	Diff.(S-F)	-.82	.63	-1.45	-1.05	-.80	-.25
Control of Environment	Fall	-1.36	-.93		-1.08	-1.72	
	Spring	-1.71	-1.42		-1.24	-2.00	
	Diff.(S-F)	-.35	-.49	.14	-.16	-.18	.02
% with low Vocational Goal Discrepancy	Fall	42%	27%		59%	58%	
	Spring	24%	39%		69%	58%	
	Diff.(S-F)	-18%	12%	30%	10%	0%	10%

$^{*}p < .10$ $^{**}p < .05$ $^{***}p < .01$

[1] Negative scores indicate feeling of control

3. Action

In the fall of 7th grade, there were no significant differences for either males or females between II and traditional students on the math game (used to measure risk-taking and use of feedback). See Table 8. In the spring, however, II females made significantly more feedback errors than traditional females (t = 2.317, p = .029, two tailed).

Table 6.8 Shifts in Performance on the Math Game from Fall to Spring in the 7th Grade by Instructional and Sex Groupings

		Male			Female		
		Ind.Instr.	Trad.	Diff. (II-T)	Ind.Instr.	Trad.	Diff. (II-T)
Initial Risk Errors	Fall	.26	.29		.15	.23	
	Spring	.07	.18		.12	.04	
	Diff.	-.19	-.11		-.03	-.19	
Feedback Errors	Fall	.41	.61		.42	.34	
	Spring	.68	.56		.36	.04	.32**
	Diff.	.29	-.05		-.06	-.30	
Total Errors	Fall	.67	.90		.57	.57	
	Spring	.75	.74		.48	.08	.40**
	Diff.	.08	-.16		-.09	-.49	

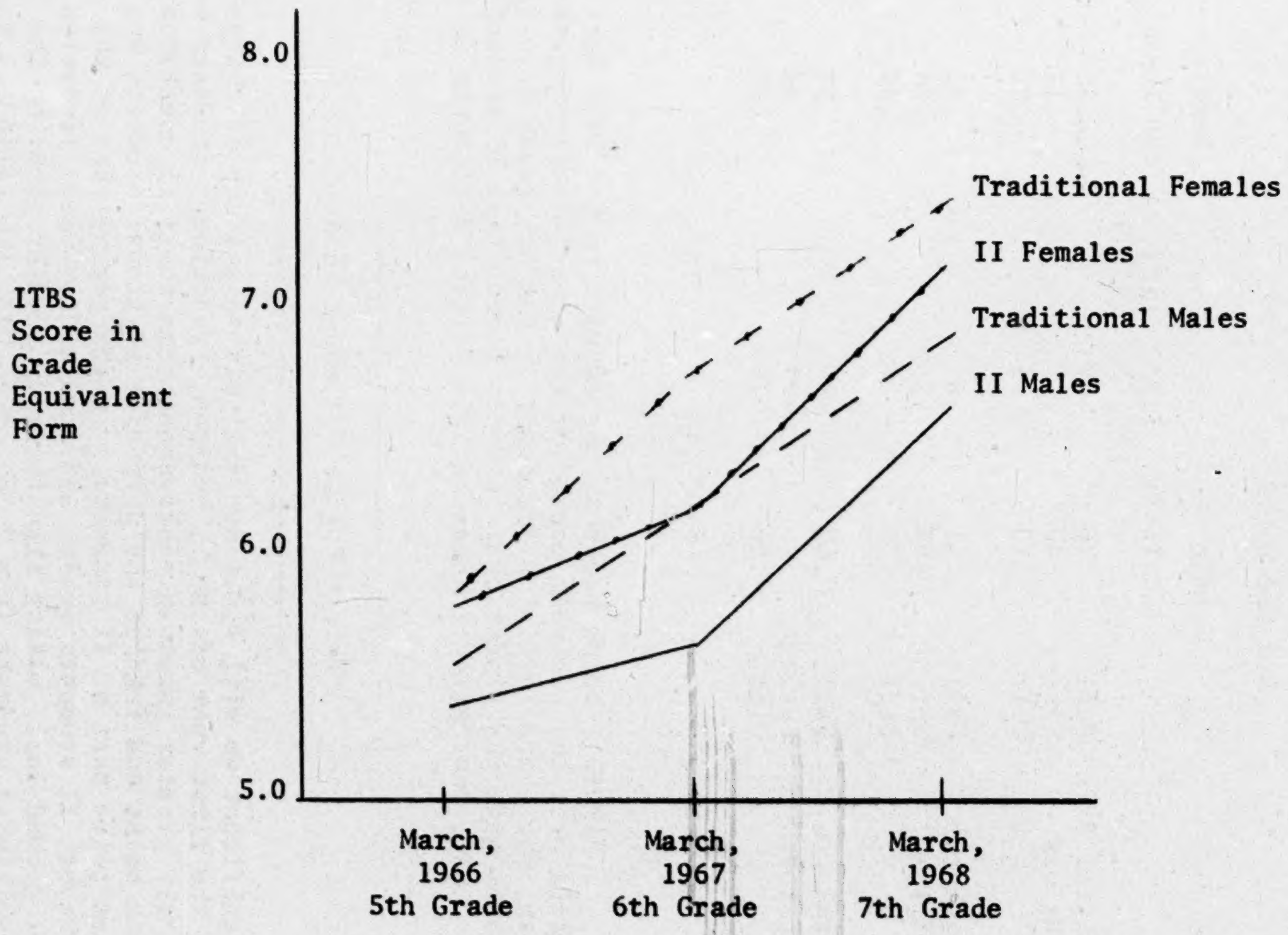
$^{*}p < .10$ $^{**}p < .05$

Figure 1 below presents the results on the Iowa Test of Basic Skills over the two year period of the experimental program. As can be seen, there are initial differences in the 5th grade (pre-II) ITBS scores with the traditional students higher than II students (t = 2.392, p = .020, two tailed). Because this initial difference is statistically significant we will limit our analysis to a study of change scores. In the first year of the II program, traditional students made significantly greater gains in achievement than their II counterparts. For both males and females the gain of traditional students was more than twice that of II students. In the second year of the program, however, II students (males and females combined) recovered most of the ground lost, making significantly greater gains on the ITBS than traditional students (t = 2.565, p = .013, two tailed). When looking at the total amount of change over the two year period, there were no significant differences between II and traditional students for either the male or female sample. This indicates that the II program

Insert Figure 6.1 about here

Figure 6.1

Mean Scores on the Iowa Test of Basic Skills (ITBS) in 5th, 6th and 7th Grades for II and Traditional Groups (Male and Female)



did not result in a permanent set-back for its students, nor in a greater overall achievement gain than the traditional students.

Data on action measures outside the school setting were collected only in the spring of 7th grade. Information from the Saturday Scorecard indicates that II males spend a significantly lower proportion of free time with others than traditional males (t = 2.610, p = .017, two tailed). II females, however, spend a significantly greater proportion of time with others than traditional females (t = 2.126, p = .044, two tailed). Table 9 presents the data on participation in group activities and hobbies. No significant differences were apparent for males or females between II and traditional students either in the total number of group activities or in the frequency of involvement. For the combined sample, however, the difference between II and traditional students in the total number of group activities reached statistical significance (t = 2.05, p = .040, two tailed) with II students engaged in fewer such activities.

Insert Table 6.9 about here

Looking at student involvement in hobbies, there are no significant differences between II and traditional students (male or female) on the total number of hobbies in which they participate. However, data on the frequency of involvement indicates that traditional males have more hobbies that they do with moderate frequency than II males (p = .012, two tailed), while II males have more hobbies that they do with high frequency than traditional males (p = .036, two tailed). A significantly greater number of traditional students than II students (males and females combined) had at least one job during the period from June 1967 to March 1968.

Table 6.10 Number and Percent of II and Traditional Students Who had at least one Job from Summer, 1967 - March, 1968

Sample	II with Job No.	%	Total N	Trad.with Job No.	%	Total N	χ^{2}[1]	p
Male	14	54	26	19	61	28	1.92	.20,2 tailed
Female	17	65	26	22	85	26	1.92	.20,2 tailed
Total	31	60	52	41	79	54	3.84	.05*,2 tailed

[1] χ^2 based on McNemar test $(a-d)^2 / (a+d)$

*p = .05

Table 6.9

Comparison of II and Traditional Students on Participation in Group Activities and Hobbies (from Activities Survey Checklists, Spring 1968)

	Males					Females					Total				
	Number of pairs in which					Number of pairs in which					Number of pairs in which				
	II T	II =T	T II	p^2	N^3	II T	II =T	T II	p	N	II T	II =T	T II	p	N
1) Group Activities															
a) Total number of Group Activities done in two weeks	7	4	13	.264	24	6	5	14	.116	25	13	9	27	.040*	49
b) Number of Group Activities done 3-7 times in two weeks	6	4	13	.168	23	11	2	10	1.000	23	17	6	23	.267	46
c) Number of Group Activities done 8+ times in two weeks	8	3	12	.504	23	8	5	10	.814	23	16	8	22	.418	46
2) Hobbies															
a) Total number of Hobbies done in two weeks	9	3	12	.664	24	7	3	13	.264	23	16	6	25	.211	47
b) Number of Hobbies done 3-7 times in two weeks	4	3	16	.012*	23	6	7	8	.790	21	10	10	24	.026*	44
c) Number of Hobbies done 8+ times in two weeks	12	8	3	.036*	23	7	7	7	1.000	21	19	15	10	.137	44
c) Number of Hobbies done alone	8	3	7	1.000	18	7	3	12	.360	22	15	6	19	.602	40

[1] II T means II student is higher than matched traditional student

[2] p values based on the sign test

[3] N = number of matched pairs

* p .05

4. Summary of Results

During the first year of the program our hypotheses were partially confirmed. There were no differences between groups on *n* Ach or *n* Aff, but II students were significantly lower in *n* Power than traditional students, as predicted. There were no major differences between the full experimental and traditional groups on the other thought and attitude yield measures. However, II students learned significantly less in the first year of the program than the traditional students as measured by the Iowa Test of Basic Skills. This initial learning lag disappears during the second year as the II students catch up virtually all lost ground. Over the two year period there were no significant differences between the II and traditional students in the amount learned as measured by the ITBS.

During the second year on the program, the initial difference between groups in *n* Power disappears, while differences emerge between groups in achievement motivation and affiliative activities. In comparison with males in the traditional program, II males show significantly greater need to avoid failure in achievement-oriented situations (higher debilitating test anxiety) and significantly lower self-esteem. They are less likely to have a job, spend significantly less free time with others and have a significantly larger number of hobbies that they did eight or more times in two weeks. The overall picture of the program effects on II males suggests that they withdraw from extrinsically rewarded public achievement situations in favor of intrinsically rewarding individual activities such as hobbies.

At the end of the second year on the program, II females are significantly lower in *n* Ach than traditional females, although both groups gain in this motive during the year. This finding is supported by results on two action measures. II females make more feedback errors on the math game (are less likely to follow a moderate-risk strategy characteristic of people with high *n* Ach) and are less likely to have a job than female students in the traditional program. It appears that II females are less likely to seek out achievement-oriented situations, even though they say they value achievement strongly. Instead, II females spend significantly more free time with others although this apparently does not include a large number of structured group activities with friends. In contrast to II males who seem to seek out intrinsically rewarding private activities, II females appear to seek out affiliative activities more than achievement oriented situations.

Discussion

The contract system of teaching and learning such as the one in Duluth is being implemented in many schools across the country. Leaders in education there and elsewhere are enthusiastic about the capacity of the contract system to provide instruction uniquely matched to individual students' needs. In fact, optimistic hopes for the system constitute a utopian vision of education: students will learn more and more rapidly; they will so thoroughly enjoy learning and school that the drop-out problem will decrease, absenteeism will be reduced drastically and the pursuit of knowledge will become a voluntary lifelong process; students will become more self-reliant, more highly motivated to achieve excellence and their growing self-esteem will reflect a lengthening history of personal accomplishments in and outside school. What is most impressive, however, is the presence of dedicated educators who are implementing the contract system at a time when any change in school procedures is guaranteed to create opposition among the taxpayers, or parents, the teachers or students. Thus, it is extremely unfortunate that the empirical data do not support any of the claims for the contract system. The students studied do not learn more or more rapidly; absenteeism is not reduced; achievement motivation significantly decreases, along with lowered self-esteem among the boys; outside of school the girls seek more non-academic, affiliative activities while the boys spend more time alone with their hobbies. Because these results contradict the intentions of the program planners it is important to re-examine the implementation of their aims.

The impact of any educational innovation cannot be guaranteed in advance. Usually there are unexpected effects and perhaps even unintended ones. Different types of students will respond differently to the same program as did the II boys and the II girls. Similarly it is perfectly reasonable to expect that students at different grade levels will react differently to the same program. For example, the patterns of response to the II program may be quite different in elementary school and senior high school. Even within one age level, a new method of instruction probably will have differential utility in different subject matters. Finally, it is unlikely that any existing educational theory is sufficiently sophisticated to predict accurately what program will have what effects on what type of students at what age levels in what subject areas. The theory of educational structure presented in this research made some incorrect and insufficient predictions. This overall appraisal is not a plea to preserve the status quo. Rather, it is a recognition that many types of instruction should co-exist within any school system, each type based on well reasoned relationships to explicit educational goals. It is a recognition that inductive, empirical research should be conducted to assess the program effects on a broad range of educational yields, e.g., thoughts, attitudes and actions both inside and outside school. It is doubly valuable and doubly difficult to encourage several educational innovations simultaneously and also to obtain valid research results that help improve those innovations.

Even within the contract system there are numerous procedural options that might produce different results if they are exercised. It is possible for students to take responsibility for creating their own contract objectives, the list of appropriate resources, the sequence of their contracts as well as the pace of their learning. When teachers make these decisions, by definition students do not engage in independent inquiry. It also is possible to have more exciting methods of demonstrating mastery through cognitive, affective and motor behavior, and to have as many methods in the cognitive domain as already exist in the traditional program. It may have been the exclusive focus on paper and pencil tests that increased test anxiety in the II boys. More complex types of scoring systems such as those in athletics, industry and research could be used to reward successful group efforts in addition to outstanding individual performance. A shared sum scoring system, for example, might have encouraged the II girls to focus their increased affiliative activities on learning goals.

The net result of developing all these options for students would be to make school learning more life-like and generalizable. In contrast to standard types of school tests, life problems are recognized and defined by the person, not by someone else who provides a multiple choice question at every moment of indecision. Good solutions to life problems usually require sound thinking, humane feelings and effective action, not just a correct answer. Solving life problems involves coordinated group effort as often as intelligent individual action and students could be rewarded for developing both types of learning.

Yet, even if all these options were introduced, they might not be sufficient to reach the stated goals of the program. The sine qua non of the contract system as presently defined is the specification of performance criteria for successful completion of the contract. The system is modeled after industrial product-oriented contracts. In contrast, free inquiry and independent life-long learning, as they are usually defined, value accurate perception of information, rationality and energetic pursuit of answers, rather than reproducing a pre-established, accepted conclusion. More emphasis is placed on defining a progressive sequence of problems than on guaranteeing a final result. The spirit of free inquiry encourages learners to follow their questions wherever it leads them since the process is more important than the product. Thus, it is extremely difficult for a student or teacher to write an inquiry-oriented contract if they must state in advance precisely what will be known and how that knowledge will be demonstrated. However, inquiry-oriented contracts can be written if they are modeled after research contracts which state the problem to be investigated, the procedures to be used and the amount of effort that will be expended. As long as learning contracts are oriented primarily to learning products rather than to learning processes, this system of instruction may be incompatible with developing truly independent inquiry in students.

There is great flexibility within the contract system of instruction both in the number of procedural options and in possible overall orientations. It seems appropriate at this time to try out these additional innovations and to evaluate their impact. In this way there may be continued progress toward attaining the ultimate aims of the program.

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Chapter 7

Four Experiments in Maximizing the Yields of Achievement Motivation Training for Adolescents

Alfred S. Alschuler*

Experiment 1: Maximizing Attending Behavior

In one of the earliest attempts to develop achievement motivation, Kolb (1965)** showed that about 100 hours of instruction given a few hours a day over a six week course, improved subsequent grades of bright under-achieving high school students, provided they came from the middle class. Lower class boys showed an initial improvement and then declined in school performance. Subsequently, methods for giving instructions were expanded and tried out extensively for adult businessmen (McClelland and Winter, 1969). In planning our first two courses for adolescents, it seemed worth testing the usefulness of these improved methods on further samples of low achieving high school students. An obvious target population was the group of boys popularly called "seat warmers" -- those who dislike school and basically are waiting for their 16th birthday and a job opportunity so they can drop out of school. We hoped that an n-Ach course would increase their commitments to such basic social values as independence, acceptance of personal responsibility for the consequences of one's actions, active attempts to master the environment according to standards of excellence. We also hoped that the course would teach entrepreneurial role responsibility and improve their performance and attitudes in school. Of the 21 boys who came to the five day courses, eleven dropped out by the end of the third day. Thus, in addition to a preliminary assessment of the ultimate yields of training, we were forced to come to grips with a fundamental system maintenance problem in managing the course -- how do you maximize attending behavior.

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*This research resulted from the hard work and creative efforts of Manohar S. Nadkarni, Richard deCharms, Knowles Dougherty, John Lennon, Ron McMullen, Steven Solomon, Gordon Alpert, Jeffrey Griffith, David Kolb and Jim Reed.

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PROCEDURE

Recruitment. In January, 1966 a letter was sent by the Principal of a Boston suburban school system to 32 "seat warmers" in the 10th grade, inviting them to come to a one-hour presentation about the project. Twenty-two boys attended and heard the courses described as something that would help them understand themselves better and improve their school work. They were told that the course was for people with unused "potential", "late bloomers" who could benefit from courses like those given to businessmen around the world. The course was scheduled for the week of their winter vacation in a rural residential setting on the edge of the Metropolitan Boston area. In individual interviews, 14 said they wanted to go, 2 said "No," and 6 said "Maybe." The program was also explained to the parents of the boys in an evening session at the school arranged for the benefit of those who were curious enough to attend. Parental permission to attend the course was required by the school. Eight boys showed up for the five-day session in the country, two of whom dropped out on the third day.

A second group was recruited in a similar manner for the April vacation. Alumni of the first course were paid to help in recruiting individuals. A general presentation was attended by 26 out of the 41 invited. From this group and others contacted, 18 said they wanted to attend, 7 said "No," and 9 were in the "Maybe" category. Twelve actually showed up for the course (including 3 who had said "Maybe"), of whom 8 went home on the second day, and one on the third. An additional boy was brought along by an assistant trainer who was his parole officer to whom the boy had just been assigned after having been released from a detention home. Only 4 boys from the school actually completed the course; two alumni of the first course joined them for the last 2 days.

Matched controls. This left a total of 10 boys who had completed the course and 11 who had been exposed to some of it and dropped out. Each boy was carefully matched for age, IQ, and grade point average in the five quarters before the training with a boy from the large group who had heard about the course, expressed an interest, but for one reason or another had not attended. No boy who had said "No" at the outset was included among the controls. Thus the trained and control groups were roughly equated for initial expressed interest in self-improvement. One might, of course, suppose that those who actually showed up had more motivation, but the supposition is probably incorrect on two counts: (1) many of the boys in the control group wanted to come but were genuinely prevented by the necessity of work, illness, etc., and (2) subsequent events showed that many who went were not so much interested in self-improvement as they were in having a good time.

Training. The courses were patterned almost exactly after those given for adult businessmen and fully described elsewhere (see McClelland and Winter, 1969)*. In fact, the key trainer was the same man, Shri M.S. Nadkarni, who had conducted the courses for Indian businessmen. He worked in collaboration with teachers and guidance personnel from the Harvard Graduate School of Education and from the staff of the high school involved. The course inputs included (1) learning about the "achievement syndrome", the planning pattern, action strategies and feelings of people with high achievement motivation, (2) some exercises in self study, (3) setting personal goals for after the course, and (4) learning individual responsibility from group living. The full course totaled about 50 hours and contained a full measure of practically all major course inputs described in Chapter 2. The partially trained group (i.e., those who dropped out after 2 or 3 days) were exposed to about 10-15 hours of the course consisting largely of learning the achievement syndrome and engaging in a self analytic group session. They also were "exposed" to the prestige inputs of Harvard University, a scientific research project.

The first course seemed, on the whole, reasonably successful. The six who stayed for the whole time became quite enthusiastic about achievement motivation, its effects on their own lives, and their role in spreading the concept to others in the school. In interviews about ten months later, they made comments like the following:

> "Pretty good course. Smartens you up a little. Realize now school is important. Need it to go places. Try to better self and stay in."
>
> "Liked all of it. Before I didn't care about things, my family, nothing. When I left the course, I really wanted to do something. Had a great talk with my father, before never exchanged two words with him. Now when I get bad marks, the n-Ach course makes me feel guilty. I am keeping my marks up."
>
> "Excellent, very good course. Learned how to run a business. Helped me decide what I want to do. When I was little I wanted to be a priest. Then decided hairdressing was the job for me. Came back from course and got addresses of schools. Before I was nervous, now I am relaxed and can talk to people."

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*At this time the methods presented in Teaching Achievement Motivation (Alschuler, A.S., Tabor, D., McIntyre, J.) and associated materials had not yet been developed.

The second course was a near disaster. A good many of the boys came prepared to cut loose, and they did. What happened can best be described in their own recollections eight months later:

> "Stunk! Every time you asked the Indian guy a question, he asked a question back. It was up in a wilderness."
>
> "Mass destruction. We did $1,000.00 worth of damage and still had plenty of alcohol left. There were no restrictions. Kids are not used to that kind of freedom. It went to our heads. The course brought out insanity. But, I think I got something out of listening to others anyway."
>
> "I couldn't see the point of it. I saw no purpose to the games. It was a waste. Everybody started with the idea of causing trouble. They went wild. I didn't get anything out of it."
>
> "There were no respect for the group leaders. If they were stern, the kids would have stayed in line."

The leaders were pretty much the same as those in the first course and so were the procedures, but for a variety of reasons, the right atmosphere was not created. They had been told by the boys who recruited them that they would have a great time. They came to the resort-like course setting during their Spring vacation ready for a wild time. Once there, they looked around and immediately identified the group the group and themselves as a "bunch of kooks" rounded up by Harvard Psychologists to have their brains shrunk. The course trainers, for their part, made a conscious decision not to be jailers or disciplinarians since this would deny the boys the opportunity to take personal responsibility for their own actions. The boys brought liquor with them and responded to the challenge by going wild, not sleeping, being rude, not participating in sessions and inventing war games of their own. The instructor-led self analytic sessions were threatening and the instructional "games" seemed "stupid". Not surprisingly, most of them left the second day, and they made up 8 out of the 11 of the "partly trained" group. Of the four who stuck it out, most of them had a more positive attitude toward the course later, but a negative attitude toward the "crazy kids" who had gone wild.

RESULTS

Nearly all participants and controls were interviewed in December, January, and February 1966-67, some 8-10 months after training. Some were interviewed again in June, 1967. Grades were obtained from the school and averaged for 5 quarters after the training (for a period lasting from February, 1966 through March, 1967 for the first course, and April, 1966 through June, 1967 for the second course). One full participant dropped out of school and joined the army soon after the course. Four out of 28 in the total pool of control subjects studied dropped out. The numbers are too small to draw any conclusions about the effect of training on dropping out of school, though it should be noted that the course was not specifically aimed to keep the boys in school if it seemed better to them in terms of their carefully chosen goals to do something else.

The main results are summarized in Table 3.1, where the effects on individual boys from the fully trained group are set side by side with the changes occurring in their matched controls. The matching was done blind on the basis of the first 3 columns after a boy's name only, without any knowledge of post-training grade point averages. Seven out of nine of the fully trained boys gained at least a letter grade step in their averages (e.g. from D to D+, or .33 points), as contrasted with only 3 among the controls. As far as could be determined from the school records, the 3 control boys who showed such marked "spontaneous" improvement had not received any special "treatment". Fisher's exact test shows that the p-value of obtaining such a difference by chance is less than .04 in the predicted direction. The trained boys' overall averages rose from a solid D to a low C-, while the untrained controls went from a D to a D+.

As for the partly-trained boys who dropped out, their performance is compared with that of a new control group drawn from the same pool of subjects on an individual matching basis. Five of the subjects appearing in the first control group were also used here to produce close matching. Obviously the slight increase in the average for the course dropouts is more than equalled by a larger increase in their matched controls. As the dropouts themselves said, they got nothing out of the course. It is of some interest to know why they dropped out. Since a number of tests were given them at the outset, it is possible to check for initial differences in various characteristics. They did not differ from those who stayed on fantasy measures of n-Ach, n-Aff, or n-Power, on IQ, on occupational level of the father (precominantly skilled blue collar workers), on Debilitating Anxiety Test, on the extent to which they valued achievement or described themselves as internally controlled on Rotter's I-E scale. They only differed significantly on deCharm's (1962) self-esteem scale. Seven out of 11 of the dropouts scored above the group's median score as contrasted with only 2 of the 10 who stayed, p<.05. In other words, it looks as if it took greater self-confidence to go to the staff and ask to go home. The dropouts were also doing somewhat better in school so that they may have felt under less pressure to stay.

Table 7.1
Effects of n Ach training on grade point average (GPA) of 10th grade male underachievers

Full training (n = 9)			5 quarter GPA			No training (control) (n = 9)			5 quarter GPA		
Name	Age	IQ	Before	After	Change	Name	Age	IQ	Before	After	Change
Steve	18/8	86	.60	1.42	+ .82	George	17/9	86	.90	1.04	+ .24
Bill	17/7	90	1.44	1.60	+ .16	Chris	18/5	82	1.28	1.46	+ .18
Paul	16/9	102	.94	1.36	+ .42	Ed	17/3	97	.92	1.00	+ .08
Owen	16/9	122	1.18	(2.3)[2]	+1.12	Tom	17/0	120	1.12	2.24	+1.12
Joe	16/4	113	1.40	1.96	+ .56	Mike	16/9	118	1.34	.94	- .40
Jimmy	16/3	105	.96	1.98	+1.02	Brian	16/8	107	1.16	1.34	+ .18
Stephen	16/1	100	.86	1.20	+ .36	Norman	16/6	89	.50	.30	- .20
William	16/0	105	1.20	.80	- .40	Ken	15/8	104	1.18	2.20	+1.02
Bob	16/0	111	.58[3]	1.78[3]	+1.20	Kim	15/9	103	.80	1.40	+ .60
Averages:		104	1.02	1.60	+ .58			101	1.02	1.32	+ .30
(number gaining +.33 or better: 7)						(number gaining +.33 or better: 2)					
Partly trained[4] (n = 11)		108	1.42	1.59	+ .17	Controls[5] (n = 11)		107	1.38	1.65	+ .27

1. F=0; D=1; C=2; B=3; A=4.
2. Family moved to another state; grades are reported by the boy, not exactly comparable but clearly a large improvement.
3. From another school.
4. Dropped out after 1-2 days of training.
5. Five from the above control group used again here to produce close individual matching.

The better academic performance of the fully-trained boys after the course is also reflected in other measures, such as days absent from school, which indicates their attitude as well as actual illness. In fact, the boys refer to absences often as "skipping school." On the average, the two control groups and the partly-trained group were absent an additional day a quarter in the five quarters after the training as contrasted to the five quarters before. The fully-trained boys were absent one day less a quarter on the average. Or, to put it another way, 6 out of 9 of them went to school more often afterwards as contrasted with 3 out of 9 of their matched controls. The differences are not significant, but certainly suggests a better attitude toward school on the part of the fully-trained boys.

When the boys were interviewed at some length 8-10 months after training, there was still a marked difference in the attitude of those who had been fully trained, as evidenced by their answers to the interviewer's first non-directive question: "What are the most important things in your life? What are the most important things you do or think about now?" Among the 9 boys interviewed from the partly-trained group and the 10 from the two matched control groups, most of the answers concerned sports, having a car, playing in a band, or just getting out of school. Only 4 out of the 19 boys in these groups mentioned doing well in school or thoughts about work or a career. In contrast, every one of the 9 fully-trained boys mentioned serious education or work-related goals, most of them specific. Only one mentioned a sport as of prime importance to him, but that was because his whole family was in baseball, he was on the town champion team, and furthermore he felt he had to have a college education, which meant studying harder now. The difference between the fully-trained students and the others is highly significant, though it is hard to know, of course, how much they were talking to please someone who represented what was for nearly all of them still a very valuable and respected part of their lives. But the fact that they were able to give details of the plans they had made, or talks they had had about future jobs or schools indicated that it wasn't all just giving what they knew to be a desired response. They were doing the things that they had said at the end of the course they were going to do. One example, which is fairly typical, will help give the tone of their reports to the interviewer.

Jimmy had decided at the course that he wanted to be a hairdresser. By the middle of his senior year in high school he reported he will start in the June or September following. He picked it because it pays well and he has really put his mind to achieving his goal. He had a part-time job and saved about $500 to use for tuition at the school. He applied to the school and had an invitation to come for an interview. He said that the course takes 1,000 hours and he can work in the daytime and go to the school at night. He planned to try to get a job at the telephone company while going to school, because it is better than the part-time job he had at a dry cleaners. He was trying for the "honor roll for the first time since 3rd grade" and his grades were up (See Table 3.1). Obviously he had done a lot of concrete thinking about and planning for his future.

Even William, who was doing less well in school than before the course, said his main concern is "to make something of myself." He has an "urge to work on cars all the time," parks his car, starts to work on it, works for hours straight, forgets the time, doesn't even notice if it is raining. He doesn't like school, wanted to go to a vocational school, but couldn't talk his father into it -- who wouldn't even let him take the test for it. "My parents would never accept my being a mechanic." His problem, as he saw it, was how to make progress toward his goal in life, which involves mechanics. He has done more with mechanical drawing, but wondered if a four-year hitch in the Air Force wouldn't be the best way to achieve his goal in the end.

Typical of the control boy reports is Ken's. He said sports are most important to him, football and particularly skiing -- in winter, snow skiing, and in summer, water skiing. He also spent a lot of time with his girl and is a "bug on mechanics." He used to race go-karts, wants to race his car next year at the Connecticut dragway, but has lost his license for speeding. He never liked school and never does th the work. He said he just hasn't done much serious thinking about his future.

Discussion

What exactly do the results show? Is it reasonable to believe that five days of intensive training can significantly change school attitudes and performance, and perhaps even affect career planning beneficially? Certainly any such belief needs to be subjected to a healthy dose of skepticism. The numbers are small, and probably the least adjusted fully-trained boy is not included in the statistics because he dropped out and joined the Army. To be sure, there were dropouts among the controls too, and we can't be sure that the Army wasn't the right course for this boy, but there is certainly room for doubt that the course affected him much. Furthermore, it must be remembered that the training didn't "take" at all for half the boys -- particularly during the second training session, when the majority left after a day or two. Thus, if the overall evaluation included every boy who had at least started the training, one would have to conclude that the project as a whole had failed to produce any effects. Isn't it unfair to draw inferences only from the improvement of those who stuck out the training? Doesn't that prove they were "better stuff" to start with? The facts suggest otherwise. So far as school performance is concerned, they weren't better off, but worse off. Also, they had lower self esteem. They appeared to have stayed partly out of weakness rather than ego strength. And it hardly seems fair to include the effects of training on boys who were not exposed to much of it. Certainly, it would be unwarranted to draw extensive conclusions of any kind from such a small pilot study. It gains significance largely because it is one of the very few studies which shows that intervention can produce a significant improvement in performance of such "hard core" problem boys (Jensen, 1968)*. Furthermore, the educational input is cheap compared to some of the expensive failures reported in the literature (e.g., the Cambridge - Somerville Youth Project, see McCord, 1964)**.

The most salient problem raised by this research is how to get high potential dropouts to stay in a course designed to reduce their dropout potential. The problem is a dramatic, special instance of a ubiquitous educational issue: how to maintain attending behavior (attendance and attention) so that learning can take place? It is the first maintenance problem that must be solved if the course as a system is to succeed. While such a conclusion may seem so obvious as to be almost trivial, it does not figure largely in the literature on personality change. On the one hand, if positive results are obtained, as they were here for about half the group, then observers conclude it was "mere suggestion" or the "Hawthorne effect" -- forgetting that such a statement means little because it is clear that sometimes suggestion "takes" and sometimes it doesn't. The problem is to find out how to create an atmosphere in which suggestion will take -- which is another way of saying that far more than "mere" suggestion is involved. On the other hand, previous research has tended to try to isolate the "educational inputs" (games, fantasy, training, etc.) which are "really" responsible for what changes occur afterwards. Our experience here suggests that this isn't quite the right way to define the problem. It is not a question of this or that input which, when "applied" to pupils, produces this or that effect, but rather a question of what organizational or motivational inputs can create an atmosphere in which the boys are interested enough in the educational inputs and under sufficient control to get something from them. The stress has to be more on the interest value of the inputs, and the structure of the learning situation, than on the exact nature of the study units themselves, at least for boys of this type who have already mentally "dropped out" of school learning situations. Viewed this way, one might conclude that putting on a motivation training course is something like putting on a play. If you succeed in capturing the audience's attention long enough, the message gets across. Otherwise, you have failed and the audience is not influenced.

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*Jensen, A., "How Much Can We Boost IQ", Harvard Educational Review, Spring 1968.

**McCord, W., and J. McCord, The Psychopath. New Jersey; Van Nostrand, 1964.

Getting and maintaining attention seems to be largely a matter of creating moderate discrepancies from what is known, experiences, expected or valued. As most teachers know, when a student is given a problem far beyond his capabilities, he becomes confused and does not engage in problem solving behavior. Problems that are too simple are boring, and also fail to elicit students attention for very long. Moderately difficult or discrepant problems are best for learning. Kagan (1967)* has gone so far as to argue that the necessary and sufficient conditions for learning are (1) contiguity of the material to be learned and (2) attentional involvement through the creation of moderate novelty. "Reinforcement", from this point of view, is only one method of making a situation moderately novel, whether its the delightfully surprising appearance of a food pellet for a rat in a Skinner box or a teacher's warm pat on the back for a correct answer. Too much of either fails to be reinforcing since the organism is satiated with food or praise. This helps explain the findings in studies of learning that a sequence of "continual reinforcement -- periodic reinforcement -- aperiodic reinforcement" is best for fixing a desired stimulus-response bond in organisms. In each phase of this reinforcement sequence, moderate novelty is maintained relative to the changing norms of experience or expectations.

From this point of view, many major (not moderate) discrepancies were created for the boys in the training programs, especially those in the second course. They were told it would be fun, but the trainers wanted them to write and think like in school. Yet it certainly wasn't like school in other respects: it was held in a resort setting over vacation and there were "games". Unlike school, there were no "rules" or punishment for bad behavior in this specially selected group of pure troublemakers. They couldn't see how "going wild" would help them get better marks or a better job. This highly unfamiliar situation with so many discrepancies from patterns of schooling and vacation fun was experienced as confusing, threatening and for half of them, as something to be discontinued. Maintaining attention in motivation courses would be maximized, one would predict, if the context, rules, reference group and espoused values were less radically different from familiar learning situations.

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*Kagan, J., "On the Need for Relativism", American Psychologist 22 (2) February, 1967 pp. 131-142.

Thus, the technology of maintaining attending behavior seems to rest first on a clear understanding of the existing norms, values, roles and expectations in participants familiar learning situations. This provides the basis for creating a moderately novel learning experience. In contrast, the transfer of specific inputs or techniques used successfully in one group, to another different group may violate the principle of relativism underlying the creation of "moderate" discrepancies. Setting up a small intimate group with few rules and little protocol in a retreat setting may be engaging for adult businessmen and intolerably discrepant for potential high school dropouts.

The effects of the training on those boys who stayed through the course, while not dramatic are suggestive. In contrast to Kolb's lower class boys, their grade point average went up over a period of a little more than a year. It is difficult to tell whether the increase is as socially significant as well: What does it mean for a boy's average to go from D to C-? On the other hand, while the interviews were not rigorously coded and tabulated statistically, the differences in the extent of career planning is striking, and if confirmed on a larger sample, would seem to be very important in the lives of these boys. However, assessing the long term impact of a course is a complex problem. The results reported here included what happened for about a year after the training ended. So much else was happening as the course faded into the past, one might well wonder whether it could continue to influence them. Take Bob as a rather extreme example. The summer after the course, he attended an Upward Bound program which he liked very much. The following academic year, during which we evaluated him, he did very well indeed, at one point getting a number of honor grades in various subjects. But in the summer of 1967, he enrolled in another Upward Bound program, which he described as "lousy". He lost interest in school again, was "lazy," "bored," and received nearly all incompletes in the first quarter of the fall term. Was the effect of a couple of good experiences wiped out by a bad one? Or is he just the kind of boy who is erratic -- sometimes serious, sometimes not? He now says he is getting down to work again, but there will doubtless be many ups and downs before he ends up adjusted one way or another to the adult world.

The most that can be said for the course is that it seemed to get those who stayed thinking more seriously about their future and in many cases trying harder to achieve goals they had set for themselves tentatively during the training program. This needs to be investigated more thoroughly in order to understand the contexts, systems and conditions that facilitate the application of the course. Perhaps the primary question raised by the course is how to increase attending behavior. These two questions, plus several additional ones are explored in the next experiments in maximizing n Ach course yields.

Experiment 2: Planning patterns and action strategies*

The first necessary, but not sufficient condition for the maintenance of achievement motivation training as a system is adequate attending behavior by participants i.e., their physical presence and psychological attention. Having identified numerous possible sources of our failure to sustain attending behavior in the first experiment, we tried to find solutions to all of these problems in this second experiment. The methods we developed illustrate how the principle of creating moderate novelty can be used to generate appropriate procedures for sustaining attention.

A second purpose of this experiment was to collect a wider range of data on the yields of achievement motivation training. Even though increases in grade point averages are most persuasive to educational administrators, there are a variety of other important possible consequences of the training. There is no apriori reason for expecting that all yields will be found in school settings. In fact, past research on n Ach indicates that the yields will be in entrepreneurial contexts where people are "in charge". The first experiment suggests, for example, that long range career planning is developed by n Ach training. It may also be that other non-school attitudes, preferences, and behaviors characteristic of the entrepreneurial character type are influenced by the training. From a systems point of view, it is important to assess the nature and extent of the impact. Only then is it possible to know how the new n Ach skills are adaptive, what system goals it helps to attain and what goal conflicts are likely to arise. This knowledge would help also in solving some system maintenance problems e.g., developing more appropriate expectations and goals in participants, resolving the conflicts that occur and becoming more helpful in overcoming conditions that restrict these high probability yields.

A third purpose of this experiment was to identify, if possible, what teaching the achievement motivation syndrome contributes to the net effects of the course -- i.e., if Goal Setting (G) Interpersonal Supports (I) Self-Study (S) but no Achievement Syndrome (A) is taught, how severely will the yields of the course be reduced? In order to hold constant the effects of quantity (i.e., all four types of inputs versus only three types of inputs), it was necessary to substitute another syndrome for achievement motivation in the comparison training program. Since it is the syndrome inputs, not G, I, or S inputs, that differentiates n Ach from other types of training, it should be possible through this comparison to identify yields uniquely related to teaching the achievement syndrome.

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*I wish to thank the following people for their efforts in conducting this research: James McIntyre, Bob Hindmarsh, Michael Dole, Gordon Alpert, Judy Walker, and D.C. McClellands' Social Relations class.

It makes sense to carry the analysis of the Achievement Syndrome one step further. Teaching "Achievement Planning" and "Achievement Action Strategies" are not likely to be equally meaningful or effective for adolescents. Piaget states that it is a fundamental development in intellectual growth when adolescents can perform certain logical operations on their own thoughts. Until this period of "Formal Operations" beginning around ages 12-14, children can only perform these operations on physical reality -- i.e., during the period of "Concrete Operations". This developmental sequence suggests that learning the Achievement Action Strategies through the games exercises and role plays will be more effective than learning to conceptualize and alter one's pattern of thought, at least until the child develops "Formal Operational" thinking. Boocock and Schild, (1968)* argue that game simulations are extremely effective in teaching complex subject matter content. Cherryholms (1966)** in her review of educational research on simulation concludes, to the contrary, that there is no empirical evidence for the superiority of this method in teaching cognitive content. Cherryholms states, however, that in all studies she reviewed, the authors report dramatic increases in interest, involvement and motivation. Thus it may be that games are particularly well suited to teaching experiential contents like motivation. From the perspective of Piaget's Theory and evidence on simulations, the effects of the achievement motivation course probably will not be reduced by omitting the teaching of achievement planning for children in the period of concrete operations. In contrast, the yields should be decreased significantly if teaching the action strategies is omitted. Once the yields unique to achievement motivation training have been identified in the first set of comparison courses, it should be possible in a second set of comparison courses to assess which Achievement Syndrome inputs are essential to teaching and maintaining achievement motivation in young adolescents.

PROCEDURES

The Sample. The course participants consisted of 52 boys from 33 elementary and junior high schools in the metropolitan Boston area. The majority (32) were recruited from a morning summer school where they had classes in mathematics,

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*Boocock, S.S. and Schild, E.O. Simulation Games in Learning. Beverly Hills, California: Sage Publications, 1968.

**Cherryholms, C.H. "Some current research on effectiveness of educational simulations: implications for alternate strategies" American Behavioral Scientist, Vol.10, #2, Oct., 1966.

English, and science. The boys were attending summer school for a variety of reasons -- advanced work, remedial work, and just for fun. The remainder of the boys were recruited from another summer school and from the neighborhood surrounding the school where the achievement motivation courses were taught. The boys were divided into four groups: Achievement Full (course inputs from the areas of Goal Setting (G), Interpersonal Supports (I), Self-Study (S), and the full Achievement Syndrome)*, Affiliation Full (inputs from G, I, S, and the Affiliation Syndrome, rather than the Achievement Syndrome), Achievement Action (inputs from G, I, S, and the Achievement Syndrome, but omitting the planning pattern), and Achievement Planning (inputs from G, I, S, and the Achievement Syndrome, but omitting the action strategies). The boys were assigned to groups on the basis of grades in school, and race -- the only two items of background information known for all 52 boys at the beginning of the summer. Subsequently, additional information was obtained and is included in Table 3.2. This table compares the groups in the two sets of experimental courses.

In general, the pairs of groups are well matched. None of the differences are statistically significant. An attempt was made to obtain IQ scores on all the boys from their school files. Unfortunately, scores were available for only about 50% from nine different tests given at various times. Therefore, meaningful comparisons on this variable were not possible. The average age of the boys is well below that expected for the full acquisition of formal operations. Thus, the Action course should be more effective than the Planning course. Since the Planning group is approximately at grade level in mathematics achievement, whereas the Action group averages a little over 1 1/2 years behind grade level, if anything, this biases against obtaining results in the predicted direction. The difference in "verbal achievement" between the achievement and affiliation groups while not statistically significant favors the achievement group.

Recruitment. The boys were recruited through a speech given by one of the course instructors. In this first step in creating a temporary social system, the major thrust of our recruitment was to define the group as a highly desirable one in which to have membership. He emphasized that this was a special course originally designed for adult businessmen to help them reach their goals. Through reference to prestigious groups like "researchers at Harvard University who have discovered important differences between people who achieve and those who don't", he attempted to give volunteers a positive image, in contrast with the "seat warmers" who were publicly identified as "high potential drop-outs". The

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*See previous chapter for a more extensive description of these inputs.

TABLE 7.2

Background Characteristics of Groups Receiving Motivation Training

VARIABLE	Achievement Full (n=14)	Affiliation Full (n=13)	Achievement Action (n=11)	Achievement Planning (n=14)
Age	12.1[1]	11.6	12.3	11.7
Grade in School Completed	6.8 (n=12)[2]	6.7	7.2 (n=10)	6.5
Race				
Black	6	6	5	6
White	8	7	6	8
Socio-economic status[3]	4.5 (n=12)	4.4 (n=11)	4.4 (n=8)	3.6 (n=12)
Stanford Achievement Test[4]				
Math	5.8	6.0	5.5	6.2
Verbal	6.9 (n=13)	5.9 (n=10)	7.1 (n=10)	6.8 (n=13)
Motivation[5]				
n Ach	0.9	0.7	1.3	0.9
n Aff	1.1	0.7	1.1	0.6
n Pow	0.1 (n=12)	0.0	0.2 (n=10)	0.1 (n=12)

1. The numbers given are means.

2. When comparison statistics are based on incomplete statistics, the actual sample size is in parentheses.

3. Based on Hall J., and Jones D.C., "Social Grading of Occupations", British Journal of Sociology, 1950 (1); 1 (high administrative or executive) to 7 (unskilled manual labor).

4. Numbers represent the Grade Equivalent Achievement at the beginning of the summer.

5. n Ach, n Aff and n Power imagery only were scored for three stories. This gives a possible range from 0-3.

recruits were told the course was "only for boys" in an appeal to this fashionable clanishness of the age group. To intensify this sense of belonging to a special and valued group, they were promised T-shirts with group emblems, soft drinks and dessert to eat with their lunches, transportation home, and "fun and games" as they learned. They also were informed of another group in St. Louis being studied by the researchers, with whom they would be competing. We encouraged them, in this way, to unite against a common competitor and to begin from the outset to be concerned with achievement goals.

Of the 55 boys who heard this presentation, 52 signed up for the course and attended. This 95% initial attendance rate compares favorably with that of the high school drop-outs; of an original 48 who received a presentation and individual interviews describing the course, only 20 boys (48%) attended the course. It is not possible to ascertain whether this difference in acceptance rates is due to a difference in age, public identification of their reference group ("potential drop-outs" vs. "the fortunate few who can have a very special adult course"), the style of presentation or a combination of these factors. In both cases we were asking boys to spend more time in school during their vacation, a handicap for us that required particularly effective recruitment procedures. Even when evaluated by itself, a 95% initial attendance rate seems to be quite good.

Treatment. Each group met twice a week for two hours over a period of five weeks for a total of 20 hours of training. The "Achievement Full" and "Affiliation Full" groups were taught by a professional teacher and a college student from the Harvard research project. Another teacher and a second student from Harvard taught the "Planning and Action" groups. All four groups received identical inputs in three areas; Self-Study (e.g., Who Am I)*, Interpersonal Supports, and Goal Setting (e.g., Aiming)*. Only the Achievement Full group learned achievement planning and action strategies as well as relevant case examples -- i.e., the entire Achievement Syndrome. The Affiliation Full group, instead, played games that depended on luck and chance rather than on skill or knowledge of the Achievement Action strategies. Intra-group reactions and relations to these games were used as the experience base for meaningful group discussions about "getting along with others","making friends", "good sportsmanship", resolving conflicts, and other affiliation related topics. The "action" group did not learn achievement planning, but concentrated on such action -- skill games as "The Origami game", "The ring toss game", and "The Darts-Dice game".* In contrast the Achievement Planning group concentrated on activities described in 10 Thoughts*, and omitted all action games that taught achievement strategies.

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*These curriculum modules and the associated manual, Teaching Achievement Motivation, A. Alschuler, D. Tabor, J. McIntyre, are described by Education Ventures, Inc., Middletown, Conn., 1970.

In attempting to translate McClelland's 12 original propositions (1969)** for acquiring a motive into a more relevant teaching strategy for these students, a natural, logical and psychological sequence of goals emerged. Most of the original propositions are incorporated into this heuristic paradigm:

1. Get and sustain students attention by creating moderately novel learning situations.
2. Allow the student to experience intensely the thoughts, actions and feelings that comprise the motive.
3. Help the student clearly conceptualize the motive he has experienced.
4. Help the student intellectually relate the motive to his dominant values, ideal self-image and the demands of his salient life situations.
5. Guide the student in practicing the application of this goal oriented pattern of thoughts, actions and feelings.
6. Internalize the motive by progressively withdrawing the support of the learning situation while the student takes increasing responsibility for maintenance.

The omission of several of McClelland's 12 propositions (warm and supporting relationships with the instructors, valued continuing reference group, retreat setting) helps clarify the nature of this sequence. According to Parson's conception of the functional prerequisites of a social system, this is a strategy for the successful "goal attainment" in a psychological education course. The propositions omitted from this task orientation sequence all have to do with methods of course-system maintenance -- i.e., methods of establishing norms and values and reducing conflicts.

The six sub-goals form a logical sequence in the sense that each is required before the next can be accomplished. Before the motive can be experienced, students must be in attendance and attending. Before the student can clearly and meaningfully conceptualize the motive, he must be aware of the experience to be conceptualized, etc. The sequence of goals is cumulative in that each activity contains the previous ones. For example, intellectually relating the motive to one's values, self image and the demands of reality involves attention, memory of the experience, and a descriptive vocabulary. Furthermore, each step has distinctive criteria for success that can be used to assess progress.*

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*These curriculum modules and the associated manual, Teaching Achievement Motivation, A. Alschuler, D. Tabor, J. McIntyre, are described by Education Ventures, Inc., Middletown, Conn., 1970.

**McClelland, D.C., Winter, D.G. Motivating Economic Achievement, Free Press, N.Y. 1969.

It may be helpful to briefly illustrate this sequence as it was implemented during the training program. To get and maintain attention throughout the course we decided to create moderate novelty vis'a'vis the norms, values, and procedures of schooling as the boys knew it. The course was held in a school, taught by regular teachers for set periods of time. This context was familiar. At each stage in the learning sequence, however, we departed moderately from traditional school routines. For three of the groups (not the Planning group) we used educational games to provide the experience-base for conceptualization, rather than workbook exercises or written projects. Whenever possible we introduced "contests" in learning the conceptual vocabulary instead of orienting them to tests. We gave prizes instead of grades e.g., penny candy, ice cream bars, cokes. (In the Affiliation group there were no competitive contests and rewards were always given to all students.) To help them relate their experience to values, ideal self-images and reality demands, we provided lectures, among other methods. But the presentations were made by the star of the Harvard football team, and by a local black belt judo expert wearing his judo gee. These men told how achievement Planning or Actions were helpful to them. The "final exam" of the courses was a "Personal change project". We helped each person practice what he learned by coaching them in setting a meaningful goal that could be reached in six weeks. Each boy was given a plastic serial counter, (like those used to tabulate golf scores or grocery bills) to keep track of his daily progress in money earned, basketball free throw percentage, number of pages read, etc. Like good teachers we reminded them to keep track of their progress on the graphs we gave them, but since the project extended from the last week of the course for five additional weeks, we had a popular radio D.J. remind the boys for us during the "bulletin board" portion of his program. We provided the boys with a post card each week to send in to us showing their progress. This was structured as a contest between the four groups for prizes at an ice cream party put on by the instructors five weeks after the course. This was one way we tried to progressively shift responsibility to them for maintaining what they learned.

Beyond these illustrative task-orientation activities we tried a variety of moderately novel system maintenance procedures. We continued to stress the reference groups through the special insignia T-shirts, and special group names (Jaguars, Thunderbirds, Vampires). The low student teacher ratio (approximately 7:1) allowed more individual attention and warmer personal relationships. At one point we brought in a fellow researcher from St. Louis where similar research was being inaugurated. This gave credibility to the competition between Cambridge and St. Louis and reinforced the boys sense of belonging to this group. To be sure, we relied heavily on traditional classroom system maintenance procedures and rules as well -- e.g., approximately one person talking at a time, the teacher arbitrates disputes, etc. For the most part, the tone of the classes was one of enthusiastic participation, -- a very narrow ridge between deadening over control and frenzied lack of cooperation. Virtually all of these "treatment" procedures were aimed at the successful management of the course as a system.

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*See Session 5, "Side Trip--Internalization" in Teaching Achievement Motivation, A. Alschuler, D. Tabor, J. McIntyre, EVI, Middletown, Conn.

Measures of Course Effectiveness. A wide variety of data was collected from the boys including pre-course testing, the change project results, data from the two follow-up testing sessions 6 and 9 months afterwards, and finally the school file data for the entire school year. These data are described under the four general headings below.

a) Attending behavior
   i) number of days attending the course and drop-outs
   ii) number of weekly "personal change project" post cards returned out of a possible 6.
   iii) Attendance at follow-up meetings 6 and 9 months after the course.
   iv) Degree of expressed interest in the course:
      The number of negative responses subtracted from the number of positive responses to 4 questions asked 9 months after the course.
         --"What did you think of the kids in your group?"
         --"What did you think of what you did?"
         --"Would you like to do something like that again next summer?"
         --"What did you think of your teachers?"

b) The Motive Syndrome
   i) Achievement and Affiliation Imagery.
      Three TAT stories were obtained before the course and again six months after the course. Because the stories were short, only motivational imagery for n Ach and n Aff were scored.
   ii) Feedback errors.
      In two risk taking games, like Ring Toss, Darts-Dice, and "the addition game", administered 9 months after the course, moves were scored for the number of errors made in using feedback to maximize goal attainment (see appendix on measures for scoring procedures for "the addition game").

iii) Goal Setting Change.

During the course and again six months afterwards, the boys wrote an essay on "What I want to do and be". Essays were given one point for each of the following --

- --specific goals
- --moderate risk goals
- --means stated for reaching goals

Change in "Goal Setting" was calculated by comparing scores between pre and post course essays.

c) School Performance.

i) Stanford Achievement Test (SAT) gains.

Appropriate levels of the intermediate and advanced SAT math and verbal tests were given the first day of the course and again 6 months after the course i.e., five months into the school year. The expected gain on each test is 0.5. For both tests combined, the expected gain is 1.0.

ii) Grade Point Average Gain

All English, social studies, math and science grades were converted to numerical scores and averaged for the year prior and following the summer courses: A+ = 98, A = 95, A-= 92, B+ = 88, etc.

iii) Deportment.

The number of days absent and tardy each were summed for the year prior and following the n Ach course. The presence or absence of a poor conduct mark (C or below) was noted from the school files for the year prior and following the course. From this, conduct was rated "worse", "same", or "improved".

d) <u>n Ach Related Behavior</u>

i) Number of new jobs paid outside the home as of six months after the course.

ii) Travel-exploration: excursions initiated by boy rated from +3 to -3 on basis of distance, method, purpose and frequency.

iii) Changes and new interests: sum of specific changes and new interests mentioned in response to the following questions asked 9 months after the courses;

- --"Have you changed in any way lately?"
- --"Do you have any new interests?"
- --"Have you joined any clubs?"

iv) Self image: The boys were asked to give instructions to an imaginary physical "double" so that the double would be just like them. The "instructions" were scored (+) whenever there was any concern with achievement e.g., "you work hard", "you are good at ...", "you want to do difficult things". This was administered 9 months after the course.

v) n Ach techniques: The number of statements of n Ach techniques endorsed by boy as -- "like me". Eight of 30 statements were precoded as n Ach techniques e.g., "he plans a lot", "he works hard", versus "he believes luck is important", "he is friendly".

vi) n Ach TV shows -- Twelve TV shows were listed and three were precoded as most strongly emphasizing n Ach. The boy was given a+ if his first choice in his ranking of the 12 shows was an n Ach show.

vii) n Ach athletes -- Six paragraph-descriptions of fictitious athletes were created, two of which emphasized n Ach most strongly; the others, n Power, and n Aff. The score for the boy was + if his first choice in ranking his preferences was one of the n Ach athletes.

viii) & ix) n Ach outdoor games and n Ach indoor games -- Six outdoor and six indoor games were selected. In each category there were two dominantly n Ach, two n Aff, and two n Power games. The boy's score was + if his first choice was an n Ach game.

x) Internality -- Rotter's 23 item scale to measure one's orientation to internal or external control of reinforcement was administered (see appendix on measures for the items and scoring).

xi) n Ach doodles -- Two doodles were administered and scored for n Ach on the "discreteness-fuzziness" dimension as described by E. Aronson in *Motives in Fantasy, Action, and Society*, Atkinson, J.W. (Ed.) Princeton, N.J., D. Van Nostrand Co. 1958.

xii) Overall Yield Score* -- Results for each of the eleven measures of n Ach related behavior were divided at the mean for the two groups being compared. Each boy received a + whenever his score was above the mean. Thus, each boy could receive an overall yield score ranging from 0 to +11.

RESULTS

Our success in managing the course as a system can be assessed in part through the several measures of attending behavior we collected. We did not consider this an experimental independent or dependent variable, but instead as a pre-condition for the successful completion of the experiment. Therefore, the four groups should be comparable. There are no other appropriate comparison groups to use in isolating specific sources of high or low attending behavior since the first experiment differed in many sample characteristics as well as treatment procedures. Therefore, the meaning of the general level of attending behavior will have to be judged on an apriori basis e.g., a 50% dropout rate is unacceptable. The average attendance for all four groups over the ten sessions was 77%, ranging from 74% for the Achievement Planning group to 84% for the Achievement Full group, not statistically significant differences. However, there were eight boys who attended five or fewer sessions.* We considered this an insufficient exposure to the course for a fair test of the training. They were dropped from subsequent data analysis. This is an effective "dropped out" rate of 15%. Three of these "drop outs" were due to prolonged illness and lengthy family vacations. In general, this overall rate contrasts sharply in quantity and kind with the spirited rebellious dropping out during the first experiment. Even after nine months, almost all of the boys indicated positive interest in the course; the **modal** reaction to the four follow-up "interest" questions was 4 endorsements.

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*An overall yield score was not obtained for Motive Syndrome Yield because they are measures of recall rather than of generalization. Nor was an overall yield score calculated for school performance yields because, unfortunately, about one half of the data were missing on about one half of the boys.

Post course attendance behavior is somewhat less favorable. In the Personal Change Project, 50% of the post cards were returned over the six week period ranging from 37% in the Full Affiliation group to 57% in the Action group, not statistically significant. Attendance figures for the two follow-up testing sessions are about the same averaging 65% for all four groups combined: Full Affiliation group, 58%; Full Achievement group 61%; Action group, 59%; Planning group, 82%. Overall there are no systematic significant differences between the pairs of groups that can be attributed to differences in training. Attendance appears to be sufficiently high for meaningful training, but the attrition in the follow-up testing sessions, given the originally small sample sizes, makes it even more difficult to detect any, but the strongest differences between groups in the effects of the courses.

Analysis of the long term effects of the training is a two step process. First we must ascertain that there are effects due to instruction in the achievement motivation syndrome. For this purpose the Full Achievement and Full Affiliation groups will be compared since the courses are identical except for the motive syndrome taught. Given demonstrated differences in achievement related yields attributable to instruction in the achievement motivation syndrome, it is then meaningful to ask whether the Planning or the Action components of the syndrome are most responsible for these long term effects. Thus, step two of the analysis will compare the Planning and Action groups. Table 3.3 contains the results of the four types of training on the 21 dependent variables.

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*Three from the Action group, one from the Planning group, three from the Affiliation group and one from the Full Achievement group.

It is obvious at a glance that the number of statistically significant differences between the Full Achievement and the Full Affiliation groups does not depart from what would be expected by chance in 21 comparisons. From this point of view we cannot place much confidence in any one of the long term effects. The results of achievement motivation training are not narrow and highly fused. However, the Overall Yield Score is a much better index of change since it combines the alternate manifestations of achievement motivation. As such it is closer to the nature of the motive itself, a generic concern with excellence with a wide variety of applications. Of the 14 "Full Achievement" boys, 5 did not attend the follow up testing sessions. Four of 13 boys in the "Full Affiliation" group did not attend the testing sessions. Of the remaining 9 Full Achievement boys seven, or 77% had an Overall Yield Score of six or more, while only one of the 9 Full Affiliation boys had a score of six or more. (Mann-Whitney test $Z = 2.96$, $p < .002$. In other words the training significantly increased n Ach related behavior outside of school over a nine month period following the course. This result is in accord with common sense and with the intentions of the training. We helped students apply what they learned in a variety of areas meaningful to them. Given this intended diversity of outcomes and the generic nature of a motive, a broad measure of the course's impact is more appropriate than any single index of change.

The pattern of results for the Planning and Action groups is consistent and clear. As with the first set of comparisons, no highly significant statistical differences exist on individual measures. However, comparing the two groups on the Overall Yield Score by the Mann-Whitney test results in a Z score of 1.68, $p < .05$ (1 tail) in favor of the Action group. As indicated in table 3.3, 4 of 7 Action boys (57%) scored 7 or above while only 2 of 11 Planning boys (18%) scored 7 or above on the Overall Yield Score.* By inference, it appears

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*Four members of the Action group and 3 members of the Planning group did not attend the follow up testing sessions. This reduced the effective sample sizes to 7 and 11 respectively.

Table 7.3

Long term effects of motivation training
[Experiment 2]

Effects	Number and percent of boys above median score							
	Full Achievement Group (n=14)		Full Affiliation Group (n=13)		Achievement Action (n=11)		Achievement Planning (n=14)	
The Motive Syndrome								
Achievement Imagery	5/10	50%	3/7	43%	1/8	13%	6/13	46%
Affiliation Imagery	3/10	30	4/7	57	3/8	38	5/13	39
Fewer Feedback Errors	6/9	66	3/9	33	4/6	66	5/11	45
Goal Setting Change	3/6	50	2/7	29	4/5	80	4/11	36
School Performance								
SAT Math Gain	5/8	63	2/6	33	4/7	57	6/13	46
SAT Verbal Gain	5/8	63	2/6	33	4/7	57	5/11	45
GPA Gain	7/11	64	3/8	38	5/10	50	6/12	50
Fewer Absences	4/8	50	1/5	20	5/9	56	5/11	45
Fewer Tardies	6/7	86	[1]		4/9	44	3/9	33
Same or better conduct	4/10	40	6/8	75	2/9	22	0/9	0
n Ach Related Behavior								
New jobs	6/9	66	6/7	86	4/6	66	5/14	36
Travel-exploration	5/9	56	1/9	11	5/7	71	5/11	45
Changes & new interests	4/9	44	5/9	56	3/7	43	4/11	36
Self Image	5/9	56	5/9	56	2/7	29	8/11	73
n Ach techniques	8/9	89	6/11	55	5/7	71	6/10	60
n Ach TV shows	2/9	22	3/9	33	4/7	57	2/10	20
n Ach Athletes	7/9	78	2/9	22*	4/7	57	3/11	27
n Ach Outdoor games	4/9	44	4/11	36	5/7	71	6/11	55
n Ach Indoor games	9/9	100	4/11	36**	6/7	86	7/11	64
Internality	5/9	56	4/9	44	6/7	86	6/11	55
n Ach doodles	6/9	67	4/9	44	5/6	83	3/11	27*
Overall Yield Score	7/9	77	1/9	11**	4/7	57	2/11	18

* = p .05; ** = p .01; Chi-square tests, corrected for continuity, one tail.

[1] Data were available on only 1 of 13 boys.

that the training in risk taking, use of feedback to set challenging goals, taking initiative and personal responsibility is what makes the critical differences in achievement motivation courses for boys like those in this sample. This inference is supported by two further comparisons. Using the same median split on the Overall Yield Score (6 or more) the Full Achievement group is not significantly different from the Action group (7 of 9, or 77% versus 6 of 7 or 86% above the median respectively). In contrast, the Planning group is significantly lower than the Full Achievement group: only 6 of 11 (55%) score 6 or more on the Overall Yield Score. (Mann-Whitney test $z = 1.94$, $p < .03$, 1 tail). In other words, leaving out instruction in Achievement Planning does not decrease the overall yield, whereas, leaving out the training in Achievement Action Strategies does significantly decrease the yields for this age group.

Since the several samples were not perfectly matched to begin with, it is important to get at least a brief check on these conclusions to see if background factors may influence the outcomes. The Overall Yield Score and the Stanford Achievement Test score gains (mathematics and verbal subtests combined) were used as the most important outcome variables against which to assess the influence of pre-course background variables. All four groups were combined into one sample for this analysis. Total gains in SAT and Overall Yield Scores were not significantly correlated (1) with the initial SAT scores, (2) with the difference between initial SAT scores and actual grade level, (3) with Socioeconomic Status, (4) with initial n Ach score, nor (5) with the age of the boys. With respect to this last variable, however, if we look only [illegible] the two groups that had training in Achievement Planning, where we predicted age would make a difference, it is almost significantly related to total SAT gains and Overall Yield Scores. Six out of eight boys 12 or older gained at least 1.1 years on the SAT's, whereas only four of twelve boys under 12 years old gained that much on the SAT's ($\chi^2 = 1.87$ corrected for continuity, $p < .10$, one tail). The same distribution and Chi-square is obtained for the Overall Yield Score. It appears that age of the boys, as a rough indicator of intellectual development, may be important in determining the efficacy of training oriented to changing patterns of thought.*

Discussion. The results of the experiment confirmed the major hypotheses and, overall, are grounds for being optimistic about increasing adolescents' motivation. Yet the findings are as imprecise and puzzling as they are encouraging.

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*These results probably are attenuated by the restricted range in ages. Thus, I thought it appropriate to report this nearly significant trend.

For example, attending behavior was undeniably better by all indices than our flagrant failures in the first course. We tried very hard to keep the boys coming; we put on a good show with a lot of pizazz. They responded by arriving early, staying late, wearing their special T-shirts every day until the insignia were hard to see from fading or dirt. We even had to turn away boys from Boston who came knocking at the doors to get into the "good thing" they heard about. But these hard and soft data do not reveal our continuing puzzlement over why all this occurred. Was it because they were younger? less drop-out prone? with something interesting to do during a long, idle summer? How much of our "success" can be attributed to the novelty of our pedagogy? Identifying the sources of our holding power is important for a very practical reason: students must be attending to learn. However, few teachers can, or will spend enough energy to generate all of the novel attractions we created. Therefore, we need to be equally successful in the recruitment of attending behavior, but more efficient, if the course is to be taught and maintained in a normal school.

The long term success of the courses is equally good and difficult to interpret. Teaching the achievement syndrome resulted in broad yields reflecting a variety of aspects of an orientation to achievement -- TV preferences, favorite indoor games, doodling, more efficient use of feedback, etc. Does this mean that the courses resulted only in a subtle pervasive disposition to respond more readily in achievement oriented situations, or were there some quite narrow, specific and major yields for individuals that our measures did not pick up? Much of the difficulty in answering this question stems from the nature of the measures we used, i.e. narrow bandwidth-high fidelity. The yields we measured were predicted in advance and measured as precisely as we could assess them. But, it is entirely possible that we missed the most important yields, and that the boys could have told us the big things to look for if we had asked them during the two follow-up testing sessions. Certainly this type of data, though less precise, would give us more information about where they consciously applied what they learned.

In a third way, the results are tantalizingly incomplete. Research on the value of educational simulations (Boocock and Schild, 1968) has to some degree missed the point by not assessing motivational yields along with the intended increases in information. In fact, it may be more accurate to view educational and simulations as convenient tools for piggy-backing motive arousal methods in normal classrooms, and look for increased long term motivational change as the legitimate, intended outcome of game simulations. Unfortunately, our data are less clear about why this should be so. Theoretically and empirically, age seems to be a factor. Under 14, the training in action strategies was more efficacious, and as the boys got older the training in new thought patterns seemed to be increasingly efficacious. But it may be that the novelty of learning from games, rather than this action-mode of learning itself, is crucial. In classrooms heavily dominated by cognitive exercises, "instruction", question-and-answer learning, perhaps the improvisational freedom, yet purposeful learning afforded by educational games is literally a "memorable" event. How much should the teaching strategy be oriented to the dominant learning mode of the age group? How much should the teaching strategy provide variation and contrast with traditional learning procedures? It may be possible to approximate answers by comparing the efficacy of Planning and Action inputs with an older group. If the "action training" is more efficacious, even though the students are capable of benefitting from training in new thought patterns, then "variation and novelty" probably are more important. If, on the other hand, training in new thought patterns is more efficacious, even though it is similar to traditional learning methods, then coordinating the teaching strategy with the dominant learning mode of the age group would be more important.

This second experiment made progress in adapting n Ach training for adolescents, and in showing that adolescents motivation can be increased for relatively long periods th through short training courses. The discussion of Experiment 2 suggests that further progress can be made (1) by conducting the next experiment within the constraints of normal schooling, (2) by including a more extensive open ended data collection procedure, such as a semi-structured interview, and (3) by giving a similar set of "planning" and "action" comparison courses to an older age group. This will allow us to be more precise in defining what combination of personality characteristics (age, sex, etc.) course procedures (actions strategies, planning pattern, novelty), and social contexts (school, leisure, sports, work) maximize the course yields.

Experiment 3: The usefulness of n Ach training*

From the beginning we assumed that the eventual implementation of our methods on a wide scale would depend as much or more on the availability of curriculum materials as on the validity of our methods. With each new age group, therefore, we developed additional instructional games, exercises, and role plays that would embody concretely the theoretical ideas we were testing. With our success in maintaining the attendance during Experiment 2, it became apparent that equally effective, but more practical methods would have to be developed by conducting this experiment in school during the normal school year. We decided to incorporate whatever existing procedures and sanctions there were in this average suburban high school for maintaining the physical presence of their pupils, e.g. keeping attendance records. We still had to solve the psychological attendance problem: How do you keep 30 students engaged in learning when the terrible acoustics make it physiologically difficult to hear and, when students are accustomed to about 50% "down time" in a class, i.e. "you only need to be up half the 43 minutes to get all the teacher has to say". Our goal was to adapt our procedures to the typical constraints of time, but to provide sufficient variations and contrasts to elicit and sustain a high percentage of learning, or "up time".

Our working contexts were several 10th grade "Elementary Business Principles" classes in the Vocational Education Department. The course title is a euphemism for "basic math for non-college bound students who did poorly in math in ninth grade". By virtue of their "achieved status" (relatively low grade point averages) and "ascribed status" (predominantly lower middle and upper-lower class) the large majority of these students were preparing for jobs rather than college. We argued that "achievement motivation training" probably was as appropriate an interpretation of "Elementary Business Principles" as basic math. On this basis we were allowed to give n Ach training as part of this regularly scheduled semester course.

It also seemed likely to us that the course would, in fact, be particularly relevant for those students who have more immediate concerns with succeeding outside of school.

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*I want to thank the following people whose efforts made this experiment possible: Dr. Antoinette Di Loretto, John Lennon, Diane Tabor and Steven Rodewald.

From our point of view this increased the likelihood that we might discover a consistent pattern of non-school course yields, at least among the boys in the class. Lesser (196) in his review of research on n Ach in women reports a consistent pattern of null findings, except for career oriented women or in sub-cultures where an achievement orientation for women is socially endorsed. The girls in our classes were oriented to careers, if at all, only as an interim occupation until they got married and raised a family. Thus, we expected the n Ach course to be less meaningful for them and consequently to result in fewer long term non-school yields. Lesser also reports other relevant data that in high school girls achieve by means of conforming to what is expected of them in structured situations, while boys prefer to achieve in independent situations. Lesser concludes that girls' achievement strivings are motivated more by the desire for social acceptance and approval than by the need for personal accomplishment. Therefore, we predicted that the results of the n Ach course for girls would be less evident outside of school than in school, where the more highly structured situation defines the means for approval and social acceptance. And, because n Ach is more relevant to the social roles of boys, we believed the effects of the n Ach course would be more pronounced for them, compared to the girls, both in and outside of school.

PROCEDURES

Sample. The sample consisted of a 10th grade "Elementary Business Principles" class, all of whom had received a C or less in 9th grade mathematics. The comparison group consisted of a 10th grade "Bookkeeping class" similar to the experimental class except that they all had received an A or B in their ninth grade vocational math course. Relevant comparison statistics are presented in Table 3.4.

The average age of these students is about 4 years older than those in Experiment 2. Their vocational orientation and capacity for formal operational thinking both should be considerably more well-developed. SES, IQ, the Nelson-Denny Reading Test Results and ninth grade GPA all are below the school average. As would be expected on the basis of admission to the Bookkeeping class (A or B in 9th grade math) there is a significant difference in GPA for both boys and girls favoring the control group. For the girls this may be offset in part by a significantly higher IQ in the experimental group. Because these groups are not perfectly matched, (although on the whole they are quite well matched) differences in course yields will have to be checked against these background variables.

Treatment. The course was conducted three periods a week during the last half of the first semester. The experimental group received approximately 22 hours of training,

TABLE 7.4

Background Characteristics of Experimental and
Control Subjects in Experiment 3

	BOYS		GIRLS	
VARIABLES	n-Ach (n=8)	Bookkeeping (n=12)	n-Ach (n=14)	Bookkeeping (n=14)
Age[1]	15.8	16.5	15.8	16.0
Socio-Economic Status[2]	3.7	4.2 (n=11)[6]	4.5 (n=13)	4.3
IQ[3]	100.0	100.5 (n=11)	105.0 (n=11)	99.4*
Nelson Demry Reading Test[4]	9.4 (n=7)	9.3 (n=10)	10.0 (n=12)	9.5 (n=11)
Ninth Grade GPA[5]	1.59	1.94	1.74	2.16*

* $p<.05$, based on Mann-Whitney Test

1. "Age" is calculated as of the end of the 10th grade.
2. Scores based on "Social Grading of Occupations", Hall J., Jones D.C., British Journal of Sociology, 1950 (1).
3. OTIS intelligence test administered during the eighth grade.
4. Means and ranges are in grade level equivalents, i.e., 10.2 is the second month of the 10th grade.
5. 4=A, 3=B, 2=C, 1=D, 0=F. Grades in major courses were summed and divided by the number of courses for the GPA. Withdrawals due to poor grades were counted as F's.
6. When the statistic is based on missing data, the effective sample size is given in parentheses.

taken out of the time they would have been learning other aspects of "Elementary Business Principles". The training consisted of inputs for all six phases of the learning sequence described earlier in Experiment 2 and extensively in Teaching Achievement Motivation (Alschuler, Tabor and McIntyre, 1970). The training differed from Experiment 2 in several respects. Since all participants were in school they could not volunteer for the course. Thus, our "recruitment" pitch stressed the prestigious and innovative nature of the course, e.g. "We are asking your help in adopting this businessman's course for Business Education students. This is a pilot project which, if successful, will be published and used extensively elsewhere in the country, etc." In this way we tried to avoid their seeing the course as remedial. We also said the course was not mandatory, in the sense that we would arrange study halls for those who did not wish to participate. The activity portions of the course in general were purposefully less noisy. There were no special prizes, T-shirts, insignia nor ice cream parties, out of deference to the tolerance limits of neighboring teachers and wary administrators.* The same basic games were used along with a variety of relatively novel paper and pencil self-study exercises (see Who Am I, Alschuler and Tabor, 1970). We maintained the student-teacher ratio at about 8:1. This allowed us to do considerably more individual work at the end of the course helping students identify meaningful goals and start their "personal change projects" (see Aiming, Alschuler and Tabor, 1970). In sum there were fewer noisy group exercises, more group discussion, paper and pencil work and individualized help.

Measures. Since we were not particularly interested in the short term arousal of n Ach, we decided to concentrate on the long term effects of the course. Our "In school" measures consisted of Grade Point Averages for the year prior and the two years following the course, as well as students' Deportment records (absences, tardiness and dismissals) for the same period of time.

From our point of view, the best measures of internalization are long term operant outcomes. We were more interested in internally cued Operant behavior, than in externally cued "Respondent" behavior. By analogy, school behavior is heavily cued by a highly structured learning environment. The intended "Respondent" behavior is measured, and reinforced by grades or extinguished by expulsion. A better measure of the degree to which n Ach has been internalized is to see how much internally cued, Operant n Ach behavior occurs. This means we must assess behavior in relatively unstructured, "lightly" cued situations where the range of possible behavior is extremely wide. For example, in a student's life, the summer allows for more Operant behavior than the school year, and leisure time even more than work time. Thus, in our follow up data collection we focused on what students did during the second summer after their n Ach course, approximately 18 months after their motivation training. This was sufficient time for internalization to take place and for the ubiquitous decay curve to take effect. By waiting so long and looking where there was least external pressure for achievement strivings we created an extremely tough test of the efficacy of our training.

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*In an act of pure good faith and fortitude, the superintendent allowed us to conduct this training in his school. The public disaster of our first experiment in his district was still vivid in his memory.

The n Ach course, by design, helps each student explore his own unique equation with achievement concerns. Although the general class of achievement goals, planning and strategies can be rigorously and reliably defined, the number of possible specific instances makes it difficult to predict in advance what unique applications an individual will make. A semi-structured interview is admirably suited to this situation since its flexibility (compared to paper and pencil surveys) allows the interviewer to find out from the student what unique use has been made of the course. A reliable coding system can be developed to assess the extent of achievement strivings in these reported activities. Prototypes for this type of coding system exist in McClelland and Winter's Entrepreneurial Acts Score (1969) and in Andrews' Entrepreneurial Activities Rating (EAR), (1965)*. Interestingly, Andrews found that the n Ach of Harvard freshmen measured by the TAT correlated more highly with non-academic initiative and personal responsibility, as measured by his EAR, than with grades during the freshman year.

More specifically, the interviewer asked what they did during their summer; (1) what if any work they performed, how much they were paid, how they got the job, why they got the job, what they learned from it, and whether they plan to continue with that work. (2) What did they do during their leisure time -- sports, hobbies, travel?, How did they get started?, Why?, How did it turn out?, Do they have any further plans for the activity? (3) What plans for the future do they have? How specific are the plans? Have they taken any steps to reach those goals? (4) Was the n Ach course useful? (Or, for the control subjects, the Bookkeeping course) How was it useful specifically? In each of these four areas a four point scale was developed roughly following the scoring of TAT n Ach.

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*Andrews, John "Achievement Motivation and Life Style Among Harvard Freshmen" Unpublished Doctoral Dissertation, Harvard University Department of Social Relations, 1965.

Unrelated Imagery (-1): The student has no plans or activities with the potential for achievement strivings. In most cases the main potential is for *n* Affiliation.

Task Imagery (0): The student has plans or activities with achievement potential, but they are pursued with little evidence of any *n* Ach. Instead, the student seems to be responding to external cues such as the pressure of parents or friends.

Act (+1): This category is scored if the student has completed actions toward a post or future goal.

Future Goals (+1): This category is scored when a student states a serious interest to reach an achievement goal, and he states what he plans to do and why.

A complete account of the interview schedule, the scoring system with examples and practice protocols may be found in *Teaching Achievement Motivation* (Alschuler, Tabor, McIntyre, 1970), Appendix D pp. 170-193. The reliability of the scoring of these interview protocols was 86% between two coders[*].

RESULTS

In order to determine the effects of training on Grade Point Averages (GPA) in 10th and 11th grade, the initial differences in GPA must be controlled. Analysis of covariance is the appropriate statistical technique. Changes in GPA's from 9th to 10th and from 9th to 11th grades were analyzed separately for boys and for girls, thus making four Analyses of Covariance. Of these four, the results are significant only for the difference in GPA gains in 10th grade for the boys. The mean GPA[+] in 10th grade, adjusted for 9th grade averages was 2.11 for the fully trained boys and 1.73 for the untrained control boys ($t = 1.79$, $p < .05$ one tail). On the average training increased the boys' GPA by about 1/3 of a letter grade by the end of the 10th grade, a full semester after the end of the *n* Ach course. Apparently, the effect of training on academic performance is relatively limited in time and limited to the boys.

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[*] Scorer reliability was calculated for 10 protocols by the following formula:

$$\text{reliability} = \frac{2 \times (\text{the number of agreements})}{\text{no. decisions made by coder A plus the no. decisions made by coder B}}$$

[+] F = 0, D = 1, C = 2, B = 3, A = 4.

As for deportment, the n Ach course did not produce significant decreases in the number of absences between the 9th and 10th or the 9th and 11th grades for the n Ach boys or the n Ach girls compared to the control boys and girls. There are non-significant trends for the n Ach boys and the n Ach girls compared to the control groups towards fewer times tardy during the 10th and 11th grades. When both experimental groups are combined, this trend almost reaches significance; 12 of 18 experimental subjects had the same or fewer tardies in the 10th grade compared to only 11 of 24 control subjects ($\chi^2 = 1.80$ corrected for continuity, $p < .10$, 1 tail).* These trends are maintained in the 11th grade; 10 of 18 experimental subjects have the same or fewer tardies, whereas only 9 of 24 control subjects reduce the number of tardies in 11th grade ($\chi^2 = 1.35$, corrected for continuity, $p < .15$, 1 tail). Approximately similar results occur in the number of dismissals. During 10th grade, all eight of the experimental boys had the same or fewer dismissals from school, compared to only 7 of 11 control boys during the 11th grade. The differences between the girls experimental and control groups in the reduction of dismissals is not significant for the 10th or 11th grade. "Dismissals" in this school are for legitimate, formally acknowledged reasons. "Expulsions" are erased from the records at the end of each year so that the student can start the next year with a clean slate. Thus, these deportment measures more accurately are "attendance" records. In general, it seems that the n Ach course had a minor, if any, effect on attendance.

The results of the follow up interviews are presented in Table 3.5. The results for the boys 1 1/2 years after the course are encouraging but a bit equivocal. On the one hand, they appear to engage in more work and leisure that they describe as constructive, purposeful and achievement oriented. At the same time, this difference is not reflected in the degree and specificity of future planning. The control boys actually earn significantly more than the experimental boys. The boys, and the experimental girls also, report that the n Ach course was very useful to them and describe specific changes they have made as a result of the course. A few quotations will suggest the flavor and range of these applications.

"I worked my way back into the college program."

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*The effective sample size of the experimental group was reduced from 22 to 18 for the following reasons: (1) One boy dropped out of school half way through the 10th grade and one girl dropped out at the beginning of the 11th grade, (2) Two girls did not attend the school in 9th grade. This missing data on 4 subjects makes before-after comparisons impossible.

Table 7. 5

Results of the 18 month follow-up interviews for Experimental and Control - Boys and Girls

Achievement Oriented Non School Yields	Boys		Girls	
	Experimental (n=8)	Control (n=12)	Experimental (n=14)	Control (n=14)
Summer Income	431	594*[1]	385	352
n Ach Oriented Work	0.88	0.33	0.36	0.29
n Ach Oriented Leisure	1.00	0.33	-.36	0.00
Extent of Future Plans	1.25	1.25	1.29	1.07
Reported Usefulness of the Course	1.13	0.25*	.64	-.63**

1. *= $p < .05$; **= $p < .01$

P values are based on Chi-square tests corrected for continuity. In a few cases, Fisher exact tests were used. The P values are one tailed. For each of the four interview categories, the distribution of scores was divided as close to the mean as possible. In each case this was -1,0 vs. +1, +2.

> "Once I thought about giving up basketball. Now I play with varsity players, and I learn from them."
>
> "I used to get in lots of trouble. But I sat down, thought things out and now I don't get in as much."
>
> "It made me get interested in broadcasting, a field I like, and made me plan to go to college to specialize in it. I've been covering school football games for the globe."
>
> "I want to own three or four bar rooms. I've been setting my plans down on paper."

Few such changes are attributed by control boys and girls to the bookkeeping course they took.

It is possible that the single most precise and direct route to discovering the effects of the course is to ask the students how useful the course was to them. It is also possible that these students simply told us what they thought we wanted to hear. If the answers to this interview question are valid indices of course success, they should correlate with the other results of the training. In fact, the reported usefulness of the n Ach course correlates with the change in GPA from 9th to 11th grades ($p < .008$), the change in the number of dismissals from 9th to 11th grades ($p < .007$), n Ach oriented summer work ($p < .15$), n Ach summer leisure ($p < .007$), and future plans ($p < .15$).* This pattern of relationships supports the notion that the "use of n Ach course" answers are good indicators of the course yields.

Using this yield measure it is possible to carry the analysis of results one step further. Perhaps some background variables like SES or sex dispose a person to benefit more or less from this type of training, just as "being in charge" was a pre-condition for the effectiveness of n Ach training for adult businessmen. In fact, however, the relationship between the reported usefulness of the n Ach course does not approach significance for any of the following background variables: sex, age, SES, IQ, Nelson-Denny reading test score, or 9th grade GPA*. The restricted range of scores for all but the sex variable may account for the absence of significant relationships like those found by Kolb (1965) between SES and GPA gain. However, inasmuch as only 33% of the students in the n Ach course reported that it was extremely useful (+2), and 66% useful to some degree (+1 or +2), it seems worthwhile to search for other factors in the course, or perhaps psychological differences before the course that could increase the course yield.

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*For each of these yield variables, the distribution of scores for the entire sample of n Ach course subjects was divided as close to the median as possible to form four-fold contingency tables. The p-values are based on Chi-square tests corrected for continuity and, sometimes on Fisher Exact tests. The p-values are one tailed.

Discussion

The choice of a Business Education class in which to give an achievement motivation course appeared to be ideal since the manpower allocation, the level of SES, school performance of the students and the explicit orientation of the course all seemed to increase the likelihood of producing and identifying a significant pattern of non-school yields. Basically the results confirm, but do not clarify the results from Experiment 2. The n Ach course does improve the academic performance over a two year period, more for the boys than the girls. Attendance improves over a two year period, again more for the boys than the girls. Finally the interviews revealed a variety of fairly idiosyncratic applications during the second summer after the n Ach course. These long term non-school applications viewed as a whole, are broad and specific as in Experiment 2, with no distinct clustering. Remarkable as it may be for 22 hours of motivational training to produce such a wide range of results 18 months later, it is nonetheless problematic that the conditions which maximize the course yields remain so elusive.

Some progress has been made. Girls benefit from the course, more in school than outside, but in both areas, consistently less than the boys. No other single background factor appears to pre-determine the effectiveness of the n Ach training. However, at least two further possibilities need to be examined. As indicated in Experiment 2, the interaction of age and training emphasis (action vs. planning may significantly effect the degree, if not the location of the course yields. Second, there may be some pre-course psychological dispositions that influence the effectiveness of the training. Given these variations in pre-course and course variables, it may be possible to detect more distinct patterns of yields. However, the non-school yield measure needs to be augmented by including a wider variety of more precise yield measures. This should increase the possibility of identifying yield patterns, since the interview only provides four four-point scales. Given these intentions for Experiment 4, this experiment can be seen as a useful bridge from Experiment 2.

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*Ibid previous footnote.

Experiment 4: Personality and Course Factors that Maximize the Yields of n Ach Training

This experiment explores the questions raised in Experiments 2 and 3: What combination of personality factors and types of training maximize n Ach course yields in school and outside of school. In addition to the standard demographic background variable, a variety of pre-course psychological measures were collected to assess relevant personality factors that might be related to the efficacy of n Ach training. Two types of n Ach training were provided: one n Ach course, minus the action inputs emphasized achievement planning and the other n Ach course, minus the achievement planning emphasized achievement action strategies. These are the same basic variations studied in Experiment 2 but given to an older sample, namely, 10th grade business education students. These types of courses allow us to address the question of whether n Ach inputs that maximize the course yields are related to age. We assumed that these older students would find it more meaningful than the younger students to think about their own thoughts and envision a specific future. These cognitive abilities develop during the period of formal operational thinking, according to Piaget. For most students this has begun roughly by the age of 14. Thus, we predicted that training emphasizing achievement planning would be more effective at this age. To assess the yields from training as precisely as possible, an additional set of measures of predicted non-school results was devised and administered.

PROCEDURES

Sample. The students in this experiment were drawn from from the same general population in the same school as in Experiment 3, i.e. boys and girls in two classes of 10th grade "Elementary Business Principles." Besides collecting background information from the school files (age, SES, IQ, Nelson-Denny Reading Test scores, and 9th grade GPA), we administered several psychological tests to assess further the comparability of our samples, and also to use as possible within-group predictors of gains. Specifically, the TAT (four pictures) was given to measure pre-course levels of n Ach, n Aff, and n Power.* We also obtained four questionnaire measures of attitudes hypothesized from theory and empirical research to be important.**

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*Scores on these motives were obtained using the system described in Atkinson (ed.) Motives in Fantasy, Action and Society, Princeton, N.J., D. Van Nostrand, Inc., 1958. The coder established satisfactory reliability as measured by the test stories in Atkinson's book.

**The scales, the items in the scales, and the scoring of the scales are described in the appendix on measures. These four scales constitute our "Student Questionnaire Profile" (SQP).

Value of Achievement (V Ach): Items in this scale developed by deCharms, Morrison, Reitman, and McClelland, (1955)* reflect Achievement values such as the importance in life of accomplishing things that are difficult. A high score on this scale means that the person endorses these values. Interestingly, there is rather consistent evidence that this measure does not correlate with the TAT measure of n Ach (McClelland, The Achieving Society, 1961; Atkinson (ed.) 1958). Nonetheless, it is possible that this attitude constitutes a favorable disposition to learn from a course publicly described and designed to help people implement these achievement values.

Internal-External Control of Reinforcement (I): "Internal control of reinforcement" is the generalized expectancy that reinforcement is contingent on one's own behavior. In contrast, people who believe that what happens to them is more the result of fate, chance, luck and events beyond their control have a generalized expectancy of "external control of reinforcement". Such a person is less likely to benefit from a course that pre-supposes the belief that one can achieve through energetic and planned actions. In empirical research Crandall et al (1965)[a], Lefcourt (1966)[b], and McGhee and Crandall (1968)[c] have demonstrated positive relationships between "internal control of reinforcement", achievement striving and academic performance in children. In the nationwide study of educational opportunity (Coleman, 1966)[d] the single best predictor of academic gain were three items taken from Rotter's (1966)[a] I-E scale (see also Rotter, Seeman and Liverant, 1962)[b]. Thus, besides being a possibly important pre-determinant of the effectiveness of n Ach training, increases in "internality" would be a valuable outcome of training. Systematic training in identifying and producing effects by one's own behavior may increase "internality".

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*deCharms R., Morrison H., Reitman W., McClelland D.C. "Behavioral correlates of directly and indirectly measured achievement motivation." in McClelland, D.C. (ed.) Studies in Motivation, Appleton Century Crofts Inc. N.Y., 1955 pp. 414-423.

[a] Crandall V.C., Katkovsky W., and Crandall V.J., "Children's beliefs in their own control of reinforcements in intellectual-academic achievement situations" Child Development, 1965, 36, pp. 91-109.

[b] Lefcourt H.M. "Internal versus External Control of Reinforcement: A review" Psychological Bulletin, 1966, 65, pp.206-220.

[c] McGhee P.E. and Crandall V.C. "Beliefs in internal-external control of reinforcement and academic performance" Child Development, 1968, 39, pp. 91-102.

[d] Coleman J., Equality of Educational Opportunity, Washington, U.S. Government Printing Office, 1966.

Debilitating Test Anxiety (DA): This scale, developed by Alpert and Haber (1960)[c] has been used by Atkinson and Feather (1966)[d] as their principle measure of the tendency to avoid achievement oriented situations. According to extensive research by these authors, one's orientation to achievement situations is the result of one's tendency to approach (measured by TAT n Ach) minus one's tendency to avoid (measured by DA). Thus, a high DA score might mitigate efforts to teach achievement strivings. On the other hand, if the n Ach training is successful, we might expect DA to decrease.

Self Esteem (SE): Coleman (1966)[e] reports that "Self Esteem", like "internality" is highly related to gains in school achievement. Although it is difficult to know whether this results from, or is a cause of school achievement, it is nevertheless an important pre-course variable to hold constant. Like the other attitudes an increase in SE would be a notable and worthwhile result of n Ach training. The scale used was developed by deCharms and Rosenbaum (1962)[f].

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[a] Rotter, J.B. "Generalized expectations for internal control of reinforcement" Psychological Monographs 1966, 80, no. 609 (1).

[b] Rotter J.B., Seeman M., Liverant S. "Internal versus external control of reinforcement, a major variable in behavior theory", in Washburne, N.F. (ed.) Decisions, Values and Groups, Pergamon Press, London 1962, Vol. 2, pp. 473-576.

[c] Alport R. and Haber R.N. "Anxiety in academic achievement situations", Journal of Abnormal and Social Psychology, 1960 Vol. 61, pp. 207-215.

[d] Atkinson J.W. and Feather N.T. (eds.) A Theory of Achievement Motivation, N.Y. John Wiley & Sons, Inc. 1966.

[e] Coleman, J. 1966 (ibid).

[f] deCharms R., and Rosenbaum M.E. "Self Esteem and Overt Expressions of Aggression" in Washburne N.F. (ed) Decisions, Values and Groups, Pergamon Press, London 1962, Vol. 2, pp. 291-304.

Comparisons between the two groups receiving n Ach training on all of the pre-course variables are presented in Table 3.6. As Table 3.6 indicates, the two groups of boys and girls are extremely well matched on all the measured variables. None of the statistical differences between the groups of boys or girls is significant.

Treatment. The courses given to these students were identical to the full n Ach course given to the students in Experiment 3 with the following exceptions: (1) One group did not receive any of the inputs designed to teach achievement planning (the Action group) while the other group did not receive any inputs designed to teach achievement action strategies (the Planning group) (2) Somewhat less time was spent in individual consultations with students on their "personal change projects" at the end of the course; (3) As a result of these two course reductions, the total class time of instruction was about 11 hours (15 sessions of 43 minutes) or approximately half the time of the "Full Course". The student teacher ratio was maintained at about 20 to 2. The course was given to both classes in May, 1967 during the spring of their 10th grade year. Contact with these students during the follow-up meetings occurred in February and March 1968, about 1 year after the course, and again in the late fall of 1968, 1 1/2 years after the course.

Measures. Our measures of "School Yields" consisted of increases in Grade Point Averages from 9th to 11th grade and decreases in absences, tardies and dismissals from 9th to 11th grade. In addition to these separate measures, an "Overall School-related Yield Score" was derived by dividing each distribution at the mean, and giving each individual a + for each of his scores at or above the mean, i.e., the possible range on this Overall School related Yield Score is 0 to 4.

To assess the perceived impact of the n Ach course on individuals we conducted telephone interviews 1 1/2 years after the course. These were scored in the same way as described in the previous experiment.

As in Experiment 2 we collected a wide variety of additional "Non-School Yields". These twenty additional measures were obtained approximately one year after the course. The four pre-course attitude measures were re-administered (1-4). along with a measure of the "realism of vocational risk taking" (5) based on the one developed by Mahone (1966)*.from a list of 50 occupations, students chose the one closest to their own vocational choice. Students also indicated the percentage of people they believed had less ability than

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*Mahone C.H. "Fear of failure and unrealistic vocational aspirations" in Atkinson and Feather (eds.) A Theory of Achievement Motivation, John Wiley & Sons Inc., N.Y., 1966 pp. 169-183.

Table 7.6

Background Characteristics of Subjects
Receiving n Ach Training in Experiment 4

VARIABLES	BOYS		GIRLS	
	n Ach Planning (means for n=12)	n Ach Actions (means for n=12)	n Ach Planning (means for n=6)	n Ach Actions (means for n=9)
Age[1]	16.1	16.4	16.1	15.8
Socio Economic Status[2]	3.6 (n=11)[3]	4.8 (n=11)	5.2	4.6
IQ[4]	104.6 (n=11)	104.0 (n=11)	100.5	101.3
Nelson-Denny Reading Test[5]	9.2	10.0 (n=11)	9.1 (n=5)	9.3
Grade Point Average[6] (9th Grade)	1.59	1.35	1.33	1.61
n Achievement	2.0	1.3 (n=10)	3.2	3.9 (n=8)
n Affiliation	1.1	2.3 (n=10)	1.3	3.0 (n=8)
n Power	1.8	2.4 (n=10)	2.7	2.6
V Achievement	1.3	1.0	2.0	2.1
Internability[7]	4.3	3.7	2.0	3.3
Debilitating Anxiety[8]	2.3	-1.3	-1.7	-3.6
Self Esteem	0	1.5	0.7	3.3

1. As of the beginning of the n Ach course.
2. SES is based on Hall, J., Jones, D.C. "Social grading of occupations" British Journal of Sociology, 1950 (1).
3. When comparison statistics are based on missing data, the actual sample size is given in parentheses.
4. Based on the OTIS IQ Test administered in 8th grade.
5. Scores are given in grade level equivalents i.e. 10.2 equals the second month of the 10th grade. The test was given in October of the 10th grade.
6. A=4, B=3, C=2, D=1, E=0. Grades for major courses were summed and divided by the number of courses to obtain the GPA.
7. A high score here means high on "internality".
8. A high score here means low on debilitating test anxiety.

they, and the percentage of people who did not have enough ability to do their chosen job. This allowed us to derive a discrepancy score between their perceived ability and the ability they believed was required by the job. This discrepancy score was our measure of the realism of their vocational aspirations.

To assess other non-school yields we constructed an Activities Survey. We wanted to identify more precisely some of the possible changes in the areas probed broadly by the interview, i.e. work, leisure, sports, and hobbies. No existing measure was appropriate for our needs. A search of the 6th mental measurements yearbook revealed a vast number of attitude survey or measures of social pathology or tallies of rare and dramatically creative accomplishments or biographical information unresponsive to n Ach training (e.g. how many siblings do you have?). Since our entire Activities Survey plus detailed instructions for scoring are presented separately in the appendix on Measures, the various indices used in this experiment will be described only briefly here.

Work: We asked each subject how much he or she earned during the summer of 1967 (6), probed for evidence of initiative in finding and landing the job (7), how much the subject earned during the school year (8), and probed for evidence of initiative in getting and landing the job (9). We also found out how much the subject earned during the summer of 1968 (10), and calculated the increase or decrease over the previous summer (11).

Leisure: We tried to sample the subjects use of leisure time by obtaining an hour-by-hour record of what they did the last Saturday. This record was scored for when they got up (12), the number of operant hours (awake, non-meal hours)(13), the number of hours spent in purposeful activities alone (14), and purposeful activities with others (15). We also asked if they had made any special independent trips and, if so, how far they went (16).

Sports and Games: From a list of about 30 sports (separate lists for boys and girls), subjects were asked to indicate which ones they do 3 or more times in each two-week period during the appropriate season. This was scored for the total number of activities (17), and the number of pre-coded achievement-oriented, individualistic, competitive sports they checked (18). The coding was based on Kulakow's scoring system.*

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*See McClelland's The Achieving Society, Princeton, N.J. D. Van Nostrand, pp. 323-324.

Hobbies: From a list of about 30 hobbies (again separate lists for boys and girls), subjects were asked to check the ones they did 3 or more times during a normal two-week period. These responses were coded for the number of pre-coded achievement oriented hobbies (19). This coding was based on Kagan and Moss' (1962)* finding that boys who have more mechanical hobbies show higher levels of achievement imagery in their TAT's as adults. The result is the opposite for girls. The number of mechanical hobbies is negatively correlated with achievement imagery; for girls the scoring was reversed.

The final portion of the first follow-up session was devoted to interview questions. Students were asked to describe the two most important things in their life. These answers were coded from -1 to +2 using the same system as in the interview for "future plans" (20).

As with the set of school yields we also derived an "Overall Non School Yield" score from the 20 measures described above. For each measure the distribution of scores was divided at the mean. An individual's Overall Non School Yield score consisted of the number of times his 20 scores were at or above the mean.

RESULTS

None of the results on the four individual school yields, nor on the Overall School Yield Score are significantly different for the Action and Planning groups either for the boys or for the girls. None of the results for the twenty individual Non-school yields are significantly different for the action and planning groups for the boys or the girls. However, as in Experiment 2 there is a significant difference between the Action and Planning groups for the boys on the Overall Non School Yield Score. Nine of 12 boys (75%) in the Planning group earned an Overall Non School Yield Score of 9 or more, while only 4 of 13 boys (31%) in the Action group earned a score of 9 or more. ($\chi^2 = 3.39$, $p < .05$, one tail). As in Experiment 2, the results of the training are reflected in a broad array of specific instances rather than being concentrated in a few narrow areas of large change. This is consistent with the nature of the motive itself; it is a generic concern, not a highly focused specific interest.

The meaning of this difference between the Action and Planning groups is clarified further by comparing the Overall School Yield Scores of each group against the results for the fully trained boys in Experiment 3. A slightly abbreviated Overall Non-School Yield score had to be used since only 15 of the 20 measures had been obtained for the fully trained boys.* In all other ways the Overall Non-School Yield score was derived in precisely the same way. Five of 7 fully trained boys (71%), 8 of 12 boys in the Planning group (67%), and 4 of 12 boys in the Action group (33%) obtained a score of 8 or more on this abbreviated Overall Non-School Yield score. Only the difference between the Fully trained group and the Action group is significant. (Mann-Whitney test, $Z = 1.96$, $p = .05$, 1 tail). In other words, omitting instruction in Achievement Planning decreases the long term yield score for boys of this age group. Whereas, apparently 11 hours of training for boys of this age group that omits instruction in Achievement action strategies is nearly as effective as a full 22 hour course. Since there are no significant differences for the girls on the abbreviated overall non school yield score, this difference in training appears to be more important for boys than for girls.

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*Kagan, J. and Moss, H.A. From Birth to Maturity, N.Y., John Wiley & Sons, Inc., 1962 p. 148.

None of the four scores derived from the telephone interview show significant differences between the Action oriented and Planning oriented training groups for the boys or for the girls. The single best interview score, however, the reported usefulness of the *n* Ach course, does indicate that the training as a whole was more effective for the boys than for the girls: 10 of 24 boys (42%) earned a +2 rating, while only 1 of 14 girls (7%) earned a +2 rating ($\chi^2 = 3.58$, corrected for continuity $p < .05$, 1 tail). Further, the percentage of "+2 usage" for the boys and girls combined (29%) is quite comparable to the Fully trained group in Experiment 3 (33%). This comparison shows again that even as few as 11 hours of specialized motivation training can produce significant long term gains in motivation.

It is somewhat puzzling to note that the Overall Yield Score from the 24 measures does not correlate significantly with the reported "Usefulness of the course" reported six months later, a year and a half after the course. It may simply be yet another example among numerous others in the research literature on Achievement Motivation where an operant measure of a motive (the interview) does not correlate with a respondent measure (the sum of the 24 test scores). Or, it may be that the two yields are equally legitimate but independent types of course yields, the Overall Yield Score reflecting a general disposition to respond in an achievement oriented way as reflected in a variety of test situations, as opposed to the reported usefulness of the course in planning and conducting at least one single, major project. Or, finally, it may reflect accurately changes in the students between one year and 1 1/2 years after the course. Unfortunately, our data is insufficient to allow a clear understanding of this null relationship between these two measures.

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*The four attitude scales and the measure of "realism of vocational risk taking" were not collected.

In addition to comparing the relative changes between groups, it is important to assess the significance of pre-post absolute changes in the yields. With regard to the change in GPA, if we take the mean changes in GPA from 9th to 11th grade for the control boys and control girls in Experiment 3 as a base rate, only 14 of 24 boys and 10 of 15 girls exceed this average. Both results are in the predicted direction but are not significant. These results are virtually the same when boys and girls are broken down into Planning and Action sub-groups. The absolute changes in the four measured attitudes are not statistically significant for the boys or the girls with the sub-groups combined or analyzed separately.

Another purpose of this experiment was to assess the effects of several psychological background factors on the results of n Ach training. Of the four pre-course attitudinal measures, only initial v Ach for all the boys is significantly related to the reported usefulness of the course. ($\chi^2 = 3.58$ corrected for continuity, $p < .05$, 1 tail). None of the other relationships to reported usefulness or to the Overall Yield Score are significant. The effects of two additional combinations of background variables can be evaluated. As indicated in chapter 2, Parsons (1959)* argues that by the 10th grade lower SES-low achieving students have been tracked and oriented to non-college vocational goals. Thus, we might expect low SES-low GPA students to make more use of the n Ach course than the high SES-higher GPA students in this sample. However, there were non-significant trends in this direction for the boys, girls, and for both sexes combined when the data were divided in this way and examined. A second prediction can be derived from Atkinson and Feather's theory (1966)** that the resultant disposition to act in achievement oriented ways is the sum of the tendency to approach such situations (measured by TAT n Ach) and the tendency to avoid such situations (measured by the scale for Debilitating Anxiety). Thus, we would expect students initially high in n Ach and low in DA to profit more from an n Ach course than students initially low in n Ach and high in DA. However, our data do not support this hypothesis either. In sum, neither of these complex predictions, and none of the simple relationships assessed in Experiment 3 (Age, SES, IQ, Nelson-Denny

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*Parsons, T. "The School Class As A Social System", Harvard Educational Review, Vol. 29, #4, Fall, 1959.

**Atkinson, J.W. and Feather, N. A Theory of Achievement Motivation, N.Y. John Wiley & Sons, Inc., 1966

Reading Test scores, and 9th grade GPA), and almost none of the attitude scores predicted the effects of n Ach training for the students. In contrast, there are consistent sex differences in the yields, and for the boys, initial v Ach appears to predict the usefulness of n Ach training.

DISCUSSION

These results are most meaningful when viewed in the context of results from the set of four experiments. We now have evidence that achievement motivation training can be effective over a wide age range from adults to junior high school students, provided appropriate adaptations are made to sustain the attendance and attention of the particular age group. This appears to be a simple pedagogical problem of creating moderate novelty relative to the existing teaching methods, settings, norms, and values in the school. The need for relativism means that no specific technique will be equally effective in all training contexts. This is a clear caveat for teachers not to make direct transfers of techniques described elsewhere (Alschuler, Tabor and McIntyre, 1970) into new situations without considered appreciation of the existing social norms, values and procedures. What is moderately novel in one situation may be innocuously funny or destructive in another situation.

The yields of n Ach training are broad extending from increases in GPA for boys in Experiments 1 and 3 to special projects conducted outside of school as reported in the telephone interviews. The broad range of course yields also is evident in the significantly increased "Overall non-school Yield" scores for the boys in Experiments 2, 3, and 4. Within this array of specific yields composing the "Overall" scores, no one application occurs with sufficient frequency to be predicted for an individual or group in advance. This is consistent with the theory and practice of n Ach training. N Ach is a well defined generic concern that can be manifested in a wide variety of contexts. The training teaches what the motive is, and helps students apply it in ways that are particularly well suited to their individual life situation.

The most efficient way of identifying these course related yields is to ask students what use they have made of the course. In Experiments 3 and 4 we obtained consistent yields of about 30% at the +2 "use" level, and another 30% at the +1 "use" level. These figures now constitute rough base rate yields against which the effectiveness of future combinations of course inputs can be assessed. Using this yield measure, cost-effectiveness studies can be conducted and "instructional objectives" can be stated (e.g. at least 33% at the +2 "use" level over a two year period) without coercing students into making restrictively narrow and personally inappropriate applications.

To a certain degree the factors that maximize course yields remain elusive. Of all the pre-course variables assessed, only sex, and for boys, initial v Ach predicted the degree of reported usefulness. One can restrict n Ach courses to boys and thereby increase the group percent of +2 usage, but this merely excludes potential failures instead of developing more effective training procedures. Furthermore, girls do benefit from the course to a certain degree, especially in school-related situations. As for v Ach, apparently it serves a gate keeping function. Only those boys benefit from n Ach training who value achievement goals prior to the course. Perhaps the boys with initial low v Ach do not benefit as much because the training does not help them move towards goals they value. This finding constitutes an empirically supported answer to concerned parents and administrators who fear that the course will dramatically transform their child into a greedy businessman, grasping entrepreneur and thoroughly unpleasant person. Our data show that no such extreme changes occurred and that the courses effected only those boys for whom Achievement was already a strong value. This v Ach finding has the further implication that if the results of n Ach training are to be increased, maybe the place to start is before the course by increasing individuals value of achievement.

Of the essential n Ach course variables studied, there is an important interaction with age. For boys below the age normally associated with the initial acquisition of formal operational thinking, the presence of inputs designed to teach the n Ach Action strategies is essential to maximize the yields. This would roughly correspond to the Junior High School age group. By the time students are in Senior High School, they are better able to think about their own thoughts and can construct for themselves a more meaningful set of future goals. Our data show that teaching achievement planning is more important for this age group, particularly for the boys, since the course as a whole is more effective for them.

These findings are optimistic. Relatively brief instructions (as little as 11 hours) appear to generate a wide variety of yields for a wide variety of students over a long period of time. These results stand in marked contrast to the long history of attempts to influence the motivation of adolescents in any significant way within a practical time period and cost. The surprising generality of these methods do carry with them certain limitations. Because of this very same diversity of yields, it is inappropriate for a teacher to give an n Ach course to his students with the expectation that it will boost all of their performances in the teacher's English class. At a more theoretical level, this diversity and its lack of relation to pre-course yields does not allow precise statements to be made about solutions to the larger system maintenance problems. For example, we cannot say that high-SES students apply the n Ach course in school rather than outside of school because there n Ach increases entrepreneurial role responsibility and commitment to their allocated social manpower roles. It may be that solutions to the potential conflicts like those between n Ach and the larger social system of which the student is a member (school, family, industry) are worked out in part during the individualized goal setting projects at the end of the course. Difficulties are anticipated and methods of overcoming them are devised. Training in the use of feedback to modify plans and goals attempts to internalize a self-adjusting cybernetic system to deal with these types of conflicts in the larger social system. It is not possible on the basis of data from these four experiments to specify any more precisely the principles of system maintenance during the course, or for adjusting the course to reduce conflicts between the students intensified n Ach and the values, norms, rules and expectatory of their ongoing, larger social systems.

In one sense, we could consider the problem of long term system maintenance solved, since the various yields do last for a reasonably long time. However, the +2 yield percent is only about 33%, leaving room for improvement and many questions as to why only 33% say they benefited greatly. Having explored the factors before the course and within the course that contribute to these yields, it seems appropriate in the next set of experiments to go beyond the course to examine the contribution of the subsequent environment to these yields. It seems obvious that the yields could be increased and potential conflicts with the larger social system resolved if we could also alter portions of the social environment to support and encourage n Ach. Since Lewin, it has been a fundamental axiom of the behavioral sciences that behavior is a function of personality factors and the environment. The contribution of the environment to the maintenance of strengthened n Ach behavior needs to be studied in greater detail to discover how system conflicts can be minimized and course yields maximized.

Supplementary material for this Final Report of the Achievement Motivation Development Project is listed as APPENDIX IV in the Table of Contents and is Section II of the Report, submitted under separate cover to the Office of Education.

APPENDIX IV

Book: Teaching Achievement Motivation.

Alfred S. Alschuler, Diane Tabor
James McIntyre, (Prefaced by
David C. McClelland)

Pamphlets:

- The Need to Achieve
- Who Am I?
- The Ring Toss Game
- Ten Thoughts
- The Origami Game (Leader's Manual)
- The Origami Game (Company President's Manual)
- Aiming

Publisher: Education Ventures, Inc.
(1970) Middletown, Connecticut

The publications listed above were developed in the course of the research conducted under Office of Education Project No. 7-1231
Grant No. OE-0-8-071231-1747.

Chapter 8

A Final Attempt to Maximize the Yields of Achievement Motivation Training for Adolescents*

Alfred S. Alschuler

The classic debate about what is the most effective teaching strategy has not been examined systematically in Psychological Education. Broadly Characterized, there are those who argue that the pace, content and mode of teaching should respond to the ebb and flow of students interests. Pestalozzi, Rousseau, Dewey, Piaget, Neill, and most recently, Silberman** who advocates the English model of "open education", all share the conviction that learning proceeds best when the content is cued in by the individuals unique and changing needs. Problems in designing curricula are obviated in part by creating rich, flexible student responsive learning environments. Students proceed at their own rate along self chosen paths toward learning goals often not known in advance. The teacher is something more than just another resource in the environment and something less than leader, director and expert. Through these means, advocates reason, learning ultimately is most productive and satisfying.

It is a classic debate because there have always been those who believe that teaching is most efficient when the outcomes are clearly specified in advance. This makes it possible for teaching to be thorough, systematic and effective in channelling student interests through the predetermined subject matter goals. From this perspective pedagogy is a problem of managing students responses to teacher-determined learning goals. This was the predominant orientation during the middle ages when education was rigorously focused on attaining a more perfect and well defined relationship to God. Teaching students obedience and fear of falling from Grace were the principle vehicles for insuring that the teacher could direct students' learning. Surprisingly the modern proponants of this orientation take their lead not from the clergy, but from industrial psychologists like Mager[*] who start with rigorous operational definitions of the instructional objectives. Whether through "contracts", learning by rote, traditional power oriented teaching, sophisticated multi-media and programmed instruction, these teachers all work for student mastery of specific subject matter.

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* A number of individuals assisted in conducting this research. I am particularly indebted to teachers at Broadmeadows Junior High School: Harry Bede (Principle), Althea Sawyer, Marilyn Robbins, Peggy Hoyle, Joe Long, Tom Callahan, Stella Krupka, Charles Hickey, Mary Bozolian, Jo Ann Conroy, Scott Newell, Tom Regan, Pat Cheverie. Several others were invaluable in collecting and collating the research data: Diane Tabor, James McIntyre, Beverly Silver, Steve Rodewald, and Elizabeth Wilson.

** Silberman, Crisis in the Classroom: the remaking of American Education. N.Y. Random House, 1970.

In the field of Psychological Education the prevailing ethic of maximizing satisfaction is conveyed in the titles, tone and substance of two recent books in the field; *Education and Ecstasy*, (Leonard, 1968) and *Joy* (Schutz 1967)[**] The wisdom and efficacy of this orientation in this field however, is empirically unsubstantiated. When we tried to predict whether the Satisfaction or Mastery oriented approach would most increase *n* Ach we were clearly uncertain. For each approach we could envision two opposite outcomes. It was possible that students in a Mastery oriented *n* Ach course would know more at the end of the course but dislike the learning process sufficiently to forget it faster and use it less. It was also possible that hard won new skills and concepts would be more highly valued, retained longer and used more than in a Satisfaction oriented *n* Ach courses. On the other hand, we foresaw the possibility that students in a Satisfaction oriented *n* Ach course might learn objectively less but subjectively enjoy and use it significantly more. Yet it seemed possible too, that satisfaction during the course would be insufficient to sustain a carefully planned achievement project a year or so later. Overall the classic debate seemed worth pursuing here since virtually any significant differance in the outcome of the two types of courses would constitute useful information and be interesting. Even a "no significant difference" finding would be interesting because it would fly in the face of the predominant practice and assumed superiority of satisfaction oriented teaching in the field of psychological education.

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[*] R. F. Mager, *Preparing Instructional Objectives,* Fearon Publishers. Palo Alto, California, 1962.

[**] G. B. Leonard *Education & Ecstasy*, N.Y. Delacorte Press, 1968. W. C. Schutz *Joy: expanding human awareness,* N.Y. Grove Press, 1967.

In thinking through this research question we became increasingly concerned about what happened to our students after the course was over, and what we could do to support what they learned. It is axiomatic that practice facilitates learning. The problem in Psychological Education is to determine what kind of practice maximizes the long term usefulness of what is learned. In laboratory studies, small variations in the nature, timing and amount of practice can be carefully controlled. The daily exigencies of schooling do not permit such elegant research in vivo. Nor is it likely that any minor changes would alter dramatically the major impact of training 2 years following the course. We assumed that a major new opportunity in which students from the n Ach course could practice what they learned might noticably increase the long term course yield. Therefore, in addition to giving an n Ach course we decided to restructure the way half of the students learned mathematics so that it was an Achievement-oriented game (as described in Chapter 4). Two other considerations led to this experimental question. It seemed unethical to us to increase students' concerns about striving for self chosen types of excellence, and then return them to classrooms where this process was not systematically encouraged and consciously valued. We believed the least we could do was to adapt the way in which one of their courses was taught so that they could practice and benefit from the n Ach course in school. We were supported in this concern for our students by the n Ach course teachers who also wanted to know how they could carry into their own classrooms some of the methods and principles that they were using in the motivation course itself. It seemed important to respect these concerns and to test the assumptions on which they were based. Our hypotheses, then was quite simple. We predicted that those students who also had a chance to practice what they learned for one semester in an achievement-oriented mathematics class would report a year to two years later that the n Ach course was significantly more useful to them than students who only participated in the n Ach course.

PROCEDURES

Sample and design: The students in this study were drawn from the ninth grade at Broadmeadows Junior High School in a predominantly lower-middle and upper-lower class neighborhood in a suburb near Boston. To examine both basic questions in this experiment we needed a 2 X 2 design consisting of the following four groups: (1) Students who took a "Satisfaction" oriented n Ach course and had an opportunity to apply what they learned in mathematics course restructured to emphasize n Ach, (2) Students who took a Satisfaction n Ach course but were in a normal mathematics class, (3) Students in a Mastery oriented n-Ach course who could practice in a math class restructured to emphasize n Ach, and (4) Students in a mastery oriented n Ach course taking a normal mathematics course. For purely administrative reasons within the school both restructured mathematics classes were in algebra while the normal classes were studying "Basic Math". This difference is reflected in several background characteristics of the samples described in table 8.1 below. Since analysis of the training yields is done separately for boys and girls, the data below are presented for boys and girls separately.

Table 8.1

Background characteristics of samples in the final attempt to maximize the yields of n Ach training

BACKGROUND VARIABLES	MALES				FEMALES			
	Restructured Math Class		Normal Math Class		Restructured Math Class		Normal Math Class	
	Mastery n=8[1]	Satisfaction n=8	Mastery n=10	Satisfaction n=9	Mastery n=13	Satis faction n=11	Mastery n=10	Satisfaction n=13
Age in years and months at time of n Ach course	14 yrs 10 mo	14 yrs 7 mo.	15 yrs 2 mo.	15 yrs 4 mo.	14 yrs 8 mo.	14 yrs. 6 mo.	14 yrs 9 mo.	15 yrs 0 mo.
IQ[2]	111.8 (n=6)[4]	105.3 (n=7)	96.1 (n=9)	91.2	107.8 (n=12)	106.5	106.9	95.9 (n=11)
SES[3]	4.2	4.4 (n=7)	5.1 (n=7)	5.6 (n=5)	4.8 (n=12)	5.0	3.9 (n=7)	4.8 (n=10)
V Achievement	-0.25	3.14 (n=7)	3.30	3.00 (n=7)	5.17 (n=12)	0.78 (n=9)	3.00 (n=9)	2.90 (n=10)

[1] These sample sizes are slightly smaller than the actual number in each group, since we dropped from the subsequent analysis all students who missed more than 50% of the training sessions i.e. 6 or more of the 10 sessions. There were no more than 3 from any one group.

[2] The scores reported in each cell are group means. This IQ is the score from the California Test of Mental Maturity administered in October, 1967, several months prior to the course.

[3] Socio-economic Status is based on ranking of fathers occupation using Hall J. and Jones D.C. "Social grading of occupations" British Journal of Sociology, 1950 (1). A number of fathers were deceased (ranking of 0). This reduced the sample size in several instances.

[4] When the statistic is based on incomplete data, the actual sample size is given.

The most important differences in this table are for the boys. Those who were in the restructured Algebra classes have significantly higher IQ ($t=2.73$, $p<.02$) and come from higher SES backgrounds ($t=2.52$, $p<.02$) As Parsons*(1959) points out IQ and SES are the two principal bases for orienting students towards college or vocational training. Further, the choice of the type of math to take in ninth grade is one of the first and best indicators of this manpower allocation. This appears to be the case here since 12 or 14 boys in the Algebra class (86%) went to an Academic High School in 10th grade, where as only 4 of 16 boys in the basic math class (25%) went to the Academic High School ($\chi^2= 11.75$, $p<.001$). The others went to the Vocational Technical High School in the community**. This initial difference between the boys in the achievement oriented Algebra class and the normal, basic math class will have to be taken into consideration later when analyzing and interpreting the effects of additional classroom practice in increasing the *n* Ach course yields. Fortunately this systematic difference does not occur for the girls. There are no significant differences between the girls in the Algebra classes and the basic math classes for any of these background variables nor for the percentages attending the academic High School in 10th grade.

When the population is broken down according to what type of *n* Ach course they received, there are no significant differences for the two groups of males on any of the background variables. For the girls however, the Mastery group had significantly higher IQ scores ($t=2.11$, $p<.05$) and significantly higher *V* Ach scores. ($t=2.30$, $p<.02$). Of these two differences perhaps *V* Ach is potentially more important given the predictive value for boys regarding the reported usefulness of the *n* Ach course. At a minimum here and for the boys in the two types of mathematics classes, it will be important to control for these differences statistically in analyzing the results of the training.

Treatment:

The essential characteristic of the Mastery oriented *n* Ach course was the requirement that students demonstrate they surpass a minimum level of knowledge or skill at each stage of the course before proceeding to the next stage. The structure of the Mastery n Ach course was adopted from "the math game" (chapter 4). However, instead of contracting for a percent of correct answers in a chapter, the Mastery n Ach course had four contracts covering (1) the experience of n Ach, (2) how n Ach is conceptualized, (3) how n-Ach relates to the person's life, and (4) ways to practice this motive. These contracts correspond to the middle four steps in the six step learning sequence described in chapter 3. In each contract there were ways to earn or lose mastery points. Each student had to earn at least 25 points per contract and 100 points overall to pass the course.

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* T. Parson, "The school class as a social systems: some of its functions in American Society" *Harvard Educational Review*,

** Records were not available 2 of the boys in the restructured Algebra group and three of the boys in the basic math group.

The first part of each contract contained a short introduction explaining the general ideas of the unit and specifying a learning goal. It also described two minimum requirements a student had to meet to fulfill the contract and to show that he had "mastered" the material. One requirement was to pass the contract test, worth 10 points (each contract gave a sample test item). The other requirement was to earn 15 points by doing one of the many listed bonus activities. The second part of the contract described two sets of bonus activities. Each activity was worth 15 points. The division between the two sets was somewhat arbitrary. Basically, the first set of activities was more stringently tied to the contract criteria. The second group was more open, creative, and "for fun". If the student did only one activity, he was asked to choose from among the first group. The third part of the contract was a list of resources that could be used in preparing to pass the contract test and do the bonus activities.

Other point-getting methods were built into the contracts. For example, a team of students could work together to complete a goal or project and earn extra points. On the other hand, students were penalized points if they failed to meet the contract deadline-each day late incurred a two-point penalty. Students could revise their contracts to change the deadline or to add or drop bonus activities, but the revision costs five points, and only one revision was allowed. If a student did not complete the bonus activities he signed for, he not only lost those potential points, but he was also penalized two points for each incomplete.

A typical contract included about a week's worth of activities organized around the resources. These contracts are presented in full along with a longer descriptive commentary in Teaching Achievement Motivation Alschuler, et. al. 1970, appendix E, pp 194-211). The following chart summarizes the essential elements of the four contracts.

Mastery Oriented n Ach Course Contract Scheme

Purpose	Criteria	Resources
I. n Ach Action Strategies (experience) To learn to recognize and use four n Ach action strategies: 1. realistic goal setting 2. proper use of feedback 3. taking personal responsibility 4. researching the environment	1. Identify and distinguish between: a. realistic and unrealistic (very high/very low) risk taking b. concrete immediate feedback vs general, delayed feedback c. personal responsibility and leaving things to fate, luck, etc. 2. demonstrate the action strategies in a simple decision-making game.	1. Vocabulary workshops for concepts like strategy, initiative, etc. 2. Ring Toss game 3. Darts - Dice game 4. films 5. case studies and discussion 6. guest speakers
II. n Ach Thoughts (conceptualize) To learn the ten n Ach thoughts and the goal-setting patterns they form To relate these to the action strategies	1. recognize and identify examples of achievement imagery and achievement goals, so as to be able to distinguish them from other goals, such as task affiliation, power. 2. identify the various n Ach thoughts in short written illustrations. 3. diagram the goal-setting pattern 4. define and give illustrations of AIM and other n Ach thoughts-NEED, HOS, FOF, ACT, WO, PO, HELP, FaF, SuF.	1. 10 Thoughts 2. story writing workshop 3. short story and side topics based on achievement theme. Visit by the author. 4. crossword puzzle 5. fill in blank stories 6. case study and discussion
III. Self Study (relate) To have the student relate n Ach syndrome to three areas of his own life 1. reality demands 2. self-image and personal goals 3. values of groups and culture to which he belongs.	Engage in dialogue with instructor (and small group) where issues of n Ach and reality demands, self-image, and group values are specifically discussed personally by each student.	1. Group discussions organized around questions to help students consider possible relevance-the usefulness of n Ach in their lives. 2. case studies 3. films 4. role plays 5. guest speaker 6. admiration ladder 7. Who Am I? 8. Achieving
IV. Goal Setting (practice) To have the student actually apply what he has learned to a personal achievement goal.	Complete a one-week goal-setting project based on an achievement goal, and deliberately employing achievement planning. Provide feedback and measurement of progress.	1. Aiming 2. group discussion 3. individual help from the instructors 4. help from team members.

Each contract was introduced to the students in small groups of 9 or 10. Later in the same day there was a large-group presentation aimed to get across the basic content and principles of the contract, and at the same time to capture interest and involvement. For example, we began the unit on action strategies with the Origami Game. We introduced the 10 thoughts using the "n Ach Match game". After the initial presentation, there were about two days of workshops which students signed up for in advance, after hearing a brief description or watching a demonstration of what the workshop would entail. Finally, at least one day was devoted to small-group discussions, testing, and make-up for other workshops and contracts. In addition, students would use class time to work on projects and bonuses when they weren't involved in resource workshops.

The Satisfaction n Ach course was set up like a learning carnival with several simultaneous options for students to learn the course material. Students were encouraged to go to the "booths" or groups that interested them most. Teachers were encouraged to adapt and improvise according to the emerging needs of the students. The teachers goal was to keep students "turned on". The content of the Satisfaction n Ach course consisted of the same games, exercises, and role plays as in the mastery oriented course. However, there were no contracts, no tests, and no points to be earned. The time used in the mastery course to explain directions, give and grade tests was used in the satisfaction course for small-group informal discussions and impromptu activities. One activity in particular exemplifies the difference in tone between this course and the mastery course. Since there were no tests requiring students to prove they had the basic concepts thoroughly in hand, the staff proposed a test situation that the students accepted enthusiastically; it turned out to be the high point of the course. They held a teach-in. Staff and students invited members of the school committee, representatives from the administration, the curriculum supervisors, newspaper reporters, and interested school personnel and taught them a two-hour mini-course in achievement motivation that subsequently was featured in an illustrated article in the local paper.

Half of the students in the Mastery course and half the students in the Satisfaction course had a mathematics class restructured to provide them with a clear opportunity to exercise their newly acquired skills in achievement planning and acting. The structure was modelled as closely as possible to the Origami Game (Alschuler, Tabor and McIntyre, 1970) which itself was the prototype for the original "Match game" (chapter 4), and the mastery n Ach course. The rules and contract format are presented in detail in Chapter 9. However, the main features can be summarized quickly here. Students signed a contract for each chapter of the text* worth a maximum of 1000 points. In the contract students specified their projected completion date, their total point goal and the percentage contribution they wanted tests and problem sets to make toward their point goal. Chapter grades were determined as a joint function of the actual number of points they earned and how close it was to their goal. This encouraged students to set high but personally realistic goals. Students paced themselves, could work alone, in groups, in school or outside of school. The teacher acted as a coach and spent most of his time working with individual students.

The format for the normal basic math classes was quite traditional. Each day the teacher discussed the corrected homework from the previous day, presented a new concept, answered questions from the group, assigned new homework, and let students begin work as she spent the remaining time with individual students. This teacher determined the pace and quantity of homework, due dates, test values and grades. Both here and in the restructured class a non-zero sum scoring system was used. According to the coding system for motivational games presented in chapter 4, the normal mathematics class was primarily power oriented, secondarily achievement oriented with affiliation a poor third. In contrast, the restructured class was primarily achievement oriented, secondarily affiliation oriented and least oriented towards power. Both classes and the two achievement motivation courses were conducted during the second semester of the ninth grade.

Measures: The main measures of course effectiveness were obtained through telephone interviews conducted twice, 6-8 months after the course and again 16-18 months after the course. The format of the interview and scoring procedures are presented in complete detail elsewhere** The interview generates data to assess the impact of the course on summer work, summer leisure, school term activities, future plans and the overall usefulness of the course.

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* Peters and Schoaf Algebra A Modern Approach I. Princeton D. Van Nostrand Inc. 1963.

**Appendix D, pp 170-193 in Teaching Achievement Motivation, Alschuler, Tabor & McIntyre, Middletown Conn Education Ventures, Inc. 1970.

Two weeks after the end of the *n* Ach courses students were given a test to assess 1) their knowledge of how *n* Ach is conceptualized and 2) how satisfied they were with their *n* Ach course. Knowledge was tested by asking students to a) reproduce the 10 elements in the *n* Ach planning pattern diagram, b) define each element, and c) give an example of each element. Each correct answer was given one point thus yielding a range of possible scores from 0 to 30.

Satisfaction was assessed in two ways: a) Students were asked to indicate on a 10 point scale how much they enjoyed the course: "1" (much less than any other course I've ever taken), "10" (much more than any other course I've ever taken). b) Students checked the three aspects of the *n* Ach course they liked most and the three they liked least from the following list: the casual, informal setting, having many teachers around, the games, cocoa and doughnuts, being able to choose from a number of activities, learning about yourself, learning the action strategies, learning the Achievement planning, being on a team, working in small groups, doing an individual goal setting project, the discussions, knowing in advance what would happen next, not knowing what would happen next, getting up early for the *n* Ach course[*], having visitors in the class, the films, the slide tape presentation, working for points[+], setting your own deadlines[+], the contracts[+], not having homework or tests[•], teaching visiting grown ups about *n* Ach[•].

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[*] To obtain enough time in a solid block the daily course meeting began 40 minutes before the official opening of school and ran through the first period.

[+] These three items were asked only to the students in the Mastery *n* Ach course.

[•] These two items were asked only to the students in the Satisfaction *n* Ach course.

RESULTS

1. Immediate post course results.

Two weeks after the Mastery and Satisfaction courses were over we assessed how well they could conceptualize the *n* Ach planning pattern and how much they enjoyed the course. These data are presented in table 8.2.

TABLE 8 .2

Percent of students above the mean on immediate post course yields

Yields	BOYS			GIRLS		
	Mastery Course	Satisfaction Course	P	Mastery Course	Satisfaction Course	P
Knowledge of *n* Ach planning pattern[1]	8/17 (47%)	10/16 (63%)	ns	8/19 (42%)	13/23 (57%)	ns
Reported Satisfaction with the course[2]	3/17 (18%)	14/16 (87%)	$\chi^2=13.43$ **	7/21 (33%)	12/23 (52%)	ns

*= $p<.05$; ** $p<.01$ 2 tail values based on χ^2 corrected for continuity.

1. Above the mean for the boys was 9 or more; above the mean for the girls was 17 or more.

2. Above the mean for the boys was 7 or more; Above the mean for the girls was 9 or 10.

As these data make clear, holding students responsible for mastery of the concepts during the course does not result in higher recall of the concepts two weeks after the course. Nor does catering to the shifting interests significantly improve recall. For the boys and girls in this experiment, both approaches were equally effective. However, these two types of training had marked effects on how much the boys enjoyed the courses; the boys liked the satisfaction oriented training far more than the mastery oriented training. For the girls, again here, both courses were equally enjoyable.

It is possible to identify in greater detail what it is these groups liked and disliked most about the courses by examining the data from the check list of course attributes.

TABLE 8.3

The most frequently endorsed course attributes liked and disliked by students

	Boys (n=33)		Girls (n=42)	
	liked most	liked least	liked most	liked least
Mastery Course	Games (8)[1] Cocoa & Doughnuts (8) Casual Setting (7) Able to choose activities (6)	Getting up early Contracts (10) Many teachers (9) Small Groups (9) Working for points (9)	Casual Setting (14) Games (10) Learning about self (9) Cocoa & Doughnuts (8)	Working for points (13) Getting up early (11) Discussions (9) Goal Setting project (7)
Satisfaction Course	Games (12) Cocoa & Doughnuts (8) Learn about self (7) Small groups (7)	Getting up early (10) Goal setting problems (5) Not knowing what was going to happen (4) Discussions (4) Many teachers (4)	Games (13) No homework (13) Casual setting (12)	Getting up early (18) Goal setting discussions (6) Many teachers (6)

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[1] Numbers in parentheses are number of endorsements.

Certain features were liked most and least regardless of sex or type of course. The students generally liked the games, casual setting and cocoa and doughnuts, or what might be characterized as a party atmosphere. In contrast, students generally disliked getting up early, the goal setting project and so many teachers around, i.e. the features most like "school". The boys in the mastery course disliked the contract format and working for points even more than having to get up early. These are the factors that appear to be responsible for the particularly marked dissatisfaction of these boys with the mastery *n* Ach course. These data are not sufficient to justify deleting the contract format and working for points if the mastery oriented training results in larger long term gains. These special aspects of the course must be reviewed in the perspective of the long term yields.

2. Long term yields. To indicate the general level of *n* Ach course effectiveness Table 8.4 presents the percentages of reported usefulness half a year and 1 1/2 years after the course for all sub-groups combined.

Table 8.4

Number of students reporting "major" and "minor" usefulness of the *n* Ach course 6 months and 18 months after the *n* Ach courses.

	first telephone interview (6 mo)		second telephone interview (18 mo)		one or both interviews	
Boys						
Major Usefulness (+2)[1]	2/30	(7%)	7/23	(30%)	8/30	(27%)
Minor or Major Usefulness (+1, +2)	10/30	(33%)	9/23	(39%)	13/30	(43%)
Girls						
Major Usefulness (+2)	6/43	(14%)	6/39	(15%)	12/43	(28%)
Major or Minor Usefulness (+1 or +2)	28/43	(65%)	19/39	(49%)	32/43	(74%)

[1] These scores refer to the telephone interview scoring system. Scores on this scale range from +2 to -1.

In general these results are comparable to previous n Ach courses in yielding approximately 30% at the +2 Usefulness level 1 1/2 years after the course.

In subsequent analyses the principal yield measure I have used is the higher of the two scores in the reported usefulness of the n Ach course. In effect this gives students the benefit of the doubt. Some may make an early major application of the course but not be engaged in a major application a year and a half later, or vice versa. There does not seem to be any a priori reason for assuming that the usefulness of the course should remain constant. Since the pattern of results in the following analyses for the "maximum usefulness" scores are duplicated in virtually all cases for the other scales from each of the interviews, I will present results for the "maximum usefulness" score and note exceptions to the generality of the findings for other scales, only when they occur.

Table 8.5

Maximum usefulness[1] reported by students in the Satisfaction and Mastery n Ach courses with Achievement oriented or normal mathematics classes

	Boys n Ach course		Σ	Girls n Ach course		
Math Class	Satisfaction	Mastery		Satisfaction	Mastery	
Achievement oriented	4/8 (50%)	4/8 (50%)	(50%)	5/10 (50%)	12/12 (100%)	17/22 (77%)
			N.S.			N.S.
Normal	1/6 (17%)	4/8 (50%)	5/14 (36%)	6/10 (60%)	9/10 (90%)	15/20 (75%)
Σ	5/14(36%)	8/16(50%)		11/20(55%)	21/22(95%)	
	N.S.			$\chi^2 = 10.34$ $p < .01$		

1. Data presented in the cells is the number of students with scores of +1 or +2.

In spite of the dissatisfaction experienced by the boys in the mastery course, it was as useful to them as to the boys in the satisfaction oriented *n* Ach course. Short term satisfaction does not appear to be a good predictor of the long term usefulness for boys. The opportunity to practice what they learned in an achievement oriented mathematics class also does not appear to make much difference in the long run. There are no other significant differences between the Satisfaction and Mastery groups or between boys who had an achievement oriented mathematics class and those in the normal mathematics class on any of the other interview variables for the first or second interview. In short, there is no evidence that any of the experimental variations had a long term effect on the boys.

In contrast for the girls, while there were no differences in knowledge or satisfaction immediately after the course, a significantly larger number of girls in the mastery oriented *n* Ach course report that it was very useful to them later. Since these two groups differed significantly in pre-course IQ and *V* Ach, these variables must be proven unrelated to the long term yields in order to attribute the final differences in yields to *n* Ach courses. IQ is not related to the long term yields whereas initial *V* Ach is significantly related to the reported usefulness of the course (Pearson $r = .589$). Using a non-parametric statistic, eight of ten girls who were above the mean in maximum *n* Ach usefulness (+2) were also above the mean in *V* Ach, while only nine of 28 girls below the mean in maximum *n* Ach usefulness were above the mean in *V* Ach. ($\chi^2 = 5.41$ corrected for continuity; $p = .02$ two tail). *V* Ach appears to be a predictor of *n* Ach course usefulness. This is consistent with the prior results for boys. Perhaps this relationship was not found previously for girls due to the much smaller sample size. In any case, we must control for this initial difference and then re-examine the resultant difference between groups in reported course usefulness. This re-analysis is presented in Table 8.6.

Table 8.6

The reported long term usefulness of Mastery and Satisfaction n Ach training for girls after controlling for initial differences in V Achievement.

Level of initial V Ach	Number of cases		Number of girls above (+) or below (-) median reported course usefulness for that level of V Ach			
	Mastery	Satisfaction	Mastery +	Mastery -	Satisfaction +	Satisfaction -
High (+7 to +9)	7	2	5	2	0	2
Middle (+3 to +5)	9	8	2	7	2	6
Low (-9 to +1)	4	9	3	1	2	7
Totals	20	19	10	10	4	15

	-	+
Mastery	10	10
Satisfaction	15	4

$\chi^2 = 2.40$ corrected for continuity
$p < .20$ two tail

When initial differences in V Ach are controlled, the resultant long term difference in reported usefulness of the course disappears. This long term yield is more a function of the pre-course level of Achievement valuing than of the n Ach course differences studied here. In summary, there are no long term differences in yields for boys or for girls attributable to either of the two major treatment variables.

Before attempting to put these results in perspective, we should dwell briefly on a positive finding. The girls in this experiment reported a significantly higher percent of "maximum usefulness" than the boys. Thirty two of 42 girls reported a maximum usefulness of +1 or +2 compared to only 13 of 30 boys ($\chi^2 = 10.49$; $p < .01$, two tailed*). This is a higher percentage for girls than for any of the groups of boys in any of the previous experiments. Thus, it challenges the earlier conclusion in Chapter 3 that the n Ach training is more effective for boys than for girls. Because there are so many other differences between this group of girls and previous groups (e.g. school, age, course style, summed usefulness ratings, and V Ach level) it is difficult to determine the reason for this higher percent of long term usefulness. However, these results, for whatever reason, do justify somewhat more optimistic expectations about the usefulness of n Ach training for girls.

It is difficult, time consuming, expensive and sometimes ultimately unrewarding, as in this experiment, to collect, code, collate and analyze long term course yields. There is the further difficulty in sequential research such as this, that variations in experimental courses must be chosen prior to obtaining the long term results of the previous experimental courses. For both of these reasons it would be advantageous to identify short-term yields that were effective predictors of the long term yields. This would save time and energy that might otherwise be wasted on several years of data collection and allow immediate adjustments to be made from one course to the next. In addition to these advantages the nature of the short term predictors might provide clues as to how learning in the course is transformed into useful applications. Is it, for instance, retained conceptualizations that subsequently are used? Or perhaps, is it memory of the "Achievement turn on" that is later sought in new achievement oriented situations? It would be extremely useful if either of our immediate post course measures, recall of the n Ach planning pattern or satisfaction with the course predicted reported usefulness. However, increased efficiency is not to be won so easily, since neither of these two measures in fact correlates significantly with the reported usefulness of n Ach training for the boys or for the girls.

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*These data are presented in Table 8.5.

DISCUSSION

From the perspective of these results the original hypotheses now have the character of unsubstantiated myths, even though they are plausible myths widely believed by Psychological Educators. First, Mastery oriented training is just as potent in the long run as satisfaction oriented training. In the short run, for girls it is equally satisfying and results in as much conceptual learning. Only for the boys is it less satisfying. In other respects for boys as well, Mastery oriented training is equally productive. The implication is that a wide range of teaching styles probably are viable provided the important components of the course are taught e.g. The six steps of the learning sequence described in chapter 3. In spite of the extreme rhetoric of advocates for both styles, we have no evidence that favors one approach over the other as far as the long range gains from achievement motivation training are concerned.

Second, short term levels of conceptual knowledge and satisfaction are not good predictors of long term course usefullness. Since these are the two principal types of measures that nearly all Psychological Educators currently use to evaluate their success, this finding suggests that much ongoing practice may be ill advised and misleading, especially if changes in training are made specifically to maximize immediate levels of knowledge or satisfaction. These indices have the virutes of being convenient, hallowed by the sheer history of their continued use and on the face of it, look like they would be important predictors of long term gain. In this research they are not. There are as many dissatisfied and relatively unknowledgeable course graduates who ultimately make great use of the course as there are bright and shining "A" students who apply what they learned in a major project. Most teachers gain tremendous personal satisfaction when students leave their course knowledgeable and happy. It is possible that this mutually pleasurable and assumed successful state distracts teachers from organizing their course towards short term learning goals that actually *do* lead to long term gains. Unfortunately this possibility must remain a moot question. In the area of Psychological Education we do not know what end-of-course yields should be the goals in an overall strategy for obtaining maximum long term usefullness. It is tempting to generalize to more traditional forms of education from these results since what evidence there is (and that is very little), is consistent with these findings (e.g. McClelland et.al. Talent and Society, Princeton, New Jersey, Van Nostrand, 1958).

Third, practice doesn't always help. That is too broadly stated, of course, but it is clear that the elaborate semester long restructuring of the mathematics classes to mimic the structure of the mastery course and many of the n Ach course games did not contribute to the long term gains. One way of putting this into perspective is to compare it as an input to teaching the Achievement Planning pattern. When this short conceptual input is subtracted from the n Ach course, as it was in two of the experiments in chapter 7 the long term yields decreased. In contrast, lengthy practice in the math class neither contributes to nor detracts from the long term yields from the n Ach course. Clearly it is the nature of the input that matters, not the length or extent of the input. And clearly, this kind of practice did not help. But we must also be a bit suspicious about the nature of the restructured math classes. What kind of practice was it? What was it like in the restructured mathematics classes? The boys disliked the contracts and the working for points in the Mastery n Ach course. Did they also dislike these features in the restructured math class? This restructuring was designed as close as possible to match the math game (chapter 4), but perhaps the early results with the math game were not replicated here? If so, then the restructured mathematics classes must be assessed in detail, as they are in the next chapter.

Finally, differences in methods, style, and practice are not as important determinants of long term usefulness as pre-course levels of V-Ach. This conclusion is a specific, small extension of Coleman's* finding from his nationwide study of education that certain attitudinal variables were more important determinants of gain than teacher training, physical facilities, and equipment combined. These results continue to fly in the face of ingrained optimism that, fortuitously, it is precisely those aspects of education we can control that are the most important determinants of gain. Data continues to refute this. A closer look at this particular extension of Coleman's general conclusion may be helpful. According to de Charms et al** "a consciously high desire for achievement (V-Ach) tends to be associated with conformity, a high valuation of expert authority and a low valuation of unsuccessful people" (p 442). These are the students in an n Ach course who see the training as valuable in helping them avoid being unsuccessful; they believe the instructor and conform to the planning patterns and action strategies taught to facilitate success. If any of these individual attributes were absent the course would be markedly less effective regardless of teacher style, amount of practice, etc. If the student doesn't value what is being taught; believe in the instructor or use the processes he learned, then obviously, the long term yields will be less. This does not belittle the efforts of teachers, nor reduce the need for teachers to seek the most effective pedegogy available. It merely reasserts the obvious necessity of reciprocity between student needs and what teachers teach if meaningful, long term learning is to occur.

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*Coleman T. Equality of Educational Opportunity, Washington, U.S. Government Printing Office, 1966.

**de Charms R., Morrison, H.W., Reitman and McClelland, D., "Behavioral Correlates of directly and indirectly measured achievement motivation" chapter 38 in Studies in Motivation D.C. McClelland (ed.) N.Y. Appleton Century Crofts, 1955.

Chapter 9

The Algebra Game

Alfred S. Alschuler

Several of the questions raised in the last two chapters can be answered only by a more thorough study of the effects produced by restructuring the way students learn. Can the salience of motives in students' lives be raised or lowered by restructuring the rules of the learning game? What are the initial motives and attitudes that predispose a student to benefit from specific learning structures? What happens in a classroom structured to emphasize achievement motivation? How is the classroom climate different from other, more normal classrooms? What do students like most and least about the new learning structure? Given answers to these questions, it may be possible to understand why the opportunity to practice n Ach in a restructured algebra class did not appreciably improve the long term yields of the n Ach training as reported in the previous chapter! To answer these questions we need to replicate and extend the highly suggestive experiment with the restructured fifth grade mathematics class, but this time with a larger ninth grade sample who are given a number of motive and attitude measures before, during and after their restructured algebra class.

PROCEDURES

Treatment: the algebra game and normal algebra

The algebra game, like the math game described in Chapter 4 and the mastery oriented n Ach course, was modeled after the Origami game (Alschuler, Tabor and McIntyre, 1970) which was designed to stimulate an intense, prototypic experience of achievement motivation. Each of these games or learning structures has a non-zero sum scoring system, shifts much of the decision making from the teacher to the students and makes the obstacles to success as objective, external and non-interpersonal as possible. Theoretically, these structures emphasize achievement motivation more than affiliation or power motivation. Minor modifications in the original "math game rules" had to be made to accommodate a different text book,and age group of students. However,

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*This experiment was made possible through the generous efforts of Mr. Scott Newell, Mr. Tom Regan and Mr. James McIntyre.

the format and structure was made as similar as possible to the "math game" and the mastery oriented n Ach course.

In the "Algebra game", as in its several predecessors, each round involved completing a contract. Each chapter in the Algebra text* constituted the material covered by a contract. Each contract potentially was worth 1,000 points that were earned by submitting correct answers to problem sets and by completing a chapter test. Each student could choose the relative weight given to working problem sets and taking the chapter test in accumulating contract points. For instance, one student who preferred to reduce his risk could elect to have 80% of his points come from problem sets and only 20% from the test. Within the problem sets students had the additional option of doing the harder problems worth two points or more of the easier problems worth one point each. Others who got bored with problem sets could choose a minimum of 20% and rely on results from the chapter test worth 80% of his score. The allowable range was 20% to 80% i.e. all students had to work some problems and take the test. Students also could lose points through incorrect answers and by missing the self-chosen contract deadline -- 50 points the first day and 20 points each day thereafter. An example will summarize this procedure. A fairly typical contract point goal was 800 with 70% (or 560 points) to be earned through problem sets and 30% (240 points) through the chapter test. If such a student were reasonably cautious he would turn in perhaps 660 problem set points, 100 points more than his goal. This would give him leeway on the chapter test. Suppose he scored 780 out of 1,000 on the chapter test. This could be converted by the previously chosen weighting of 30% to 234 points, giving him a total from both sources of 894 points. If his problem set solutions had been late by two days, 70 points would be subtracted for a final total of 824 points, 24 points above his original bid.

A novel feature of the Algebra game compared to normal algebra was the "bid-made" matrix for determining grades.

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*Peters and Schaaf, Algebra, a modern approach I, Princeton, D. Van Nostrand Inc., 1963.

Figure 9.1

Bid-made matrix method of determining letter grades in the Algebra game

POINTS MADE

Points bid	599 or less	600-650	651-700	701-750	751-800	801-850	851-900	901-950	951+
951+	D-	D-	D	D+	C-	C	C+	B+	A+
901-950	D-	D	D+	C-	C	C+	B	A	A
851-900	D-	D+	C-	C	C+	B-	A-	A-	A-
801-850	D-	D+	C-	C+	B-	B+	B+	B+	B+
751-800	D	D+	C	C+	B	B	B	B	B
701-750	D	D+	C	B-	B-	B-	B-	B-	B-
651-700	D	C-	C+	C+	C+	C+	C+	C+	C+
601-650	D	C	C	C	C	C	C	C	C
599 or less	D	D	D	D	D	D	D	D	D

The structure of this matrix encouraged each student to set the highest, personally realistic goal he could set. It was not wise to set a low point goal and then exceed it, because a student could only get a letter grade at the level bid e.g., note the rows beyond the diagonal. If he bid 651 and made 801, he still would have received only a C+. Had he bid more realistically to begin with, say perhaps 751, his letter grade for earning 801 points would have been B instead of C+ for the same work. This aspect of the matrix encouraged students to set challenging goals for themselves. However, if they set goals too high for themselves, they ran major risks for failure. If a student bid for 951 points and made 801 he would have received a C, whereas if he had bid 801 in the beginning and earned 801 or more, he would have received a letter grade of B+ instead of C. In these ways the matrix encouraged students to set challenging, but realistic goals, an action strategy characteristic of people with high need for achievement.

Unquestionably, this matrix rewarded or penalized students for behavior that was not mathematics proficiency in the strictest sense. It was designed to reward *n* Achievement oriented action strategies. Whether this is good or bad, depends on each teacher's own value hierarchy. In this experiment the bid-made matrix was an essential method of encouraging increased achievement motivation in the students, a desired and predicted outcome.

It is difficult to describe a typical day in the Algebra game classroom we studied, since there was no one agenda. Students were free to work in overall groups, individually, or to seek help from the teacher when needed. At the beginning of class usually about half of the students would begin work immediately. One fourth would dally until they were gently prodded, and the final few students would be at the teacher's desk with questions and requests. After this initial phase the teacher usually spent his time attending to the bookkeeping, and test giving functions of the Algebra game, or working with individual students.

In contrast, a typical day in the normal Algebra class began with a review of the previous night's homework, often called "story telling time", a reference to the number of excuses given for incomplete homework. Difficult problems were worked on the blackboard with the help of students solicited by expert questioning. This review flowed naturally into the lecture presentation of the new concept to be learned and practiced in the next night's homework. The final portion of the class almost always was spent beginning that night's homework.

In the normal algebra classes grades were earned by doing well on the chapter tests and weekly quizes. At the end of each grading period the total scores were converted to letter grades using normal curve. Some weight in special instances was given for extra homework, tenacity on tough problems or good participation in class. Virtually no decisions were left up to the students regarding the tests, the homework, the grading, the pace or the method of getting the work done. As a result, the principle differences between the Algebra game and the normal algebra class lay in the relative emphases on *n* Achievement and *n* Power. The 0-sum scoring system and the teacher's control of decision making in the normal algebra class emphasized power motivation, whereas, in comparison, the Algebra game rules emphasized *n* Achievement over *n* Power through its non-zero sum scoring and greater number and type of decisions made by students. Both types of classes neither encouraged nor discouraged *n* Affiliation through the formal rule structure.

It should be noted at this point that our original intention was to include a third group in this study, namely the Algebra game classes that also received n Ach training. However, these two groups were not included in the analysis or write up for three reasons. First, the groups were badly (i.e. statistically significantly) mismatched on a number of important background variables like previous mathematics achievement, V Achievement and debilitating anxiety. Second, because the sample sizes of the Mastery and Satisfaction n Ach - Algebra game groups were relatively small, the problem of taking these several initial differences into account through covariance analysis was both extremely complex and unreliable. Third, research completed after the design of these experiments (reported in Chapter 7) led us to believe that the results of n Ach training would not be manifest so soon or in such a narrow way in any case. Thus, these data and the additional questions posed when the experiment began are not included in this report.

Measures

We attempted to assess what was happening in the classroom in three ways: (1) through unstructured interviews and observations, (2) through a two part algebra questionnaire and (3) through a standardized measure of classroom climate. The interviews and observations were not intended to be systematic data collection procedures, but instead to get a clinical feel for what was happening and to spot any unpredicted potentially important factors that could influence the outcome.

The first part of our algebra questionnaire asked students to rank their preference for mathematics among other subjects for the first semester and for the second semester when the math game began. Students also were asked to rate on a five point scale how much they liked math second semester compared to first semester (1 "much less" to 5 "much more"). The last question of this part asked students to rate how much they learned second semester compared to first semester from 1 (much less second semester) to 5 (much more). In the second part of the algebra questionnaire we asked students to check as many of the following characteristics as they would like to see incorporated into other of their classes: setting your own deadlines, choosing the value of tests and homework, signing contracts, not many class lectures, go at your own speed, work in or outside of class, a point system for completed work, being able to work with others, setting your own goals for grades.

Our standardized measure of classroom climate was the Learning Environment Inventory developed by Walberg and Anderson*. This instrument contains 14 scales each with seven items. The scale names with an illustrative item are as follows: INTIMACY (members of the class are personal friends), FRICTION (certain students are considered uncooperative), CLIQUENESS (certain students work only with their close friends), APATHY (members of the class don't care what the class does), FAVORITISM (only the good students are given special projects), FORMALITY (students are asked to follow a complicated set of rules), SATISFACTION (students are well satisfied with the work of the class), SPEED (the class has difficulty keeping up with its assigned work), DIFFICULTY (students are constantly challenged), GOAL DIRECTION (the objectives of this class are specific), DEMOCRATIC (class decisions tend to be made by all the students), DISORGANIZATION (the class is disorganized), DIVERSITY (the class divides its efforts among several purposes), ENVIRONMENT (the books and equipment students need or want are usually available to them in the classroom).

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*Anderson, Gary J. and Walberg, Herbert J., "Classroom Climate and Group Learning", *International Journal of the Educational Sciences*, (October, 1969).

*Walberg, Herbert J., "Physical and Psychological Distance in the Classroom", *School Review*, (1969).

*Walberg, Herbert J., "Structural and Affective Aspects of Classroom Climate", *Psychology in the Schools*, *5*, 3 (July, 1968), 247-253.

*Walberg, Herbert J., "Teacher Personality and Classroom Climate", Psychology in the Schools, *5*, 2 (1968), 63-67.

*Walberg, Herbert J.and Anderson, Gary J., "The Achievement Creativity Dimension and Classroom Climate", *Journal of Creative Behavior*, (June, 1969).

*Walberg, Herbert J., "Class Size and the Social Environment of Learning", *Human Relations*, (1969).

*Walberg, Herbert J. and Anderson, Gary J., "Classroom Climate and Individual Learning", *Journal of Educational Psychology*, (January, 1969).

In order to ascertain whether certain motives, or attitudes predispose a student to doing well in the Algebra game, and to assess these possible yields, a variety of measures were administered during the first and last days of class. n Achievement, n Affiliation, and n Power were assessed using a four picture Theorematic Apperception test and scored according to the system in Appendix I of Motives in Fantasy, Action, and Society (Atkinson, et al. eds., 1958). Five attitudes were assessed: Realism of vocational decision making, V Achievement, internality, debilitating test anxiety and self esteem. These measures are described in previous chapters. The attitude measure itself, along with a scoring key, is presented in an appendix to this book. The level of Algebra achievement was measured using the Cooperative Mathematics Tests for Algebra, Form A before the Algebra game began and Form B at the end of the course. The numbers presented in subsequent tables for this test are standardized scores based on national norms. Finally, the impact of the Algebra game on subsequent mathematics proficiency was assessed by obtaining the total grade point average in math for the year following the Algebra game.

The measures of motivation were included to validate the hypotheses regarding the impact of structure, namely that achievement motivation would be significantly higher after the course in the Algebra game class, while power motivation would be higher in the normal algebra class. We did not make a prediction about affiliation motivation nor about the effects of or on the attitude measures. These were included for exploration purposes because of their theoretical relevance (see Chapter 4).

Sample Characteristics

This research was conducted in Broadmeadows Junior High School in Quincy, Massachusetts, a predominantly lower middle class, white suburb of Boston. This is the same school in which the previous experiment was conducted and one of the algebra teachers in this experiment taught the Algebra game to the ninth graders who took the mastery and satisfaction oriented n Achievement courses. Due to these commonalities the results here should shed light on the apparent lack of contribution of the Algebra games to the n Achievement training.

In order to obtain somewhat larger sample sizes for the experiment, two algebra classes in each treatment condition were combined. The teacher variable was held constant since each of the two teachers taught one normal algebra class and one restructured algebra game class. In Table 9.1 the two groups are compared on a number of precourse variables. As always, data are presented and analyzed separately for boys and for girls.

Table 9.1

Mean scores on pre-course variables for boys and girls in the Normal and Restructured mathematics classes

	BOYS			GIRLS		
VARIABLES	Normal (n=22)	Restructured (n=22)	t, p	Normal (n=21)	Restructured (n=23)	t, p
Background Characteristics						
Age (as of course, Feb. 1968)	14 yr 10 mo SD=6.9 mo^1	14 yr 9 mo 4.8 mo	n.s.	14 yr 7 mo 5.4 mo	14 yr 8 mo 6.0 mo	n.s.
IQ^2	106.43 12.31 (n=21)^3	109.00 10.48 (n=21)	n.s.	106.76 12.56	105.64 10.99 (n=22)	n.s.
California Mathematics Achievement Test^4 (Oct.1966)	41.95 22.19 (n=19)	55.43 25.56 (n=21)	t=1.789 $p<.10$	51.81 20.57	64.41 17.21 (n=22)	t=2.09 $p<.05$
Motivation Scores						
n Achievement	0.46 1.99	0.77 2.07	n.s.	0.95 2.50	1.50 3.46 (n=22)	n.s.
n Affiliation	1.59 2.50	2.91 1.74	t=2.03 $p<.05$	2.05 1.77	3.64 3.26 (n=22)	t=2.00 $p\sim.05$
n Power	2.41 2.70	1.96 2.06	n.s.	2.43 2.87	2.82 2.72 (n=22)	n.s.
Attitudes						
Realism of vocational risk taking	19.44 18.86 (n=18)	19.94 21.34 (n=18)	n.s.	8.21 25.69	-0.25 35.56 (n=20)	n.s.
V Achievement	4.53 3.52 (n=19)	4.00 3.48 (n=19)	n.s.	2.90 3.09 (n=19)	2.55 3.36 (n=22)	n.s.
Internality	2.53 3.95 (n=19)	3.53 3.20 (n=19)	n.s.	4.63 4.48 (n=19)	4.36 2.46 (n=22)	n.s.
Debilitating Test Anxiety	2.11 3.56 (n=19)	1.11 4.35 (n=19)	n.s.	0.42 4.66 (n=19)	1.73 6.17 (n=22)	n.s.
Self Esteem	0.53 3.75 (n=19)	0.84 2.69 (n=19)	n.s.	1.58 1.84 (n=19)	1.52 2.60 (n=21)	n.s.
Cooperative Mathematics Test(Algebra) Feb. 1968; Form A	138.77 5.15	145.41 8.61	t=3.10 $p<.01$	142.43 6.45	146.13 6.44	t=1.91 $p<.10$

Footnotes for Table 6.1 on following page.

The samples are well matched for boys and for girls with two exceptions. For both sexes the restructured algebra classes performed substantially better in mathematics two years prior to the course and also at the start of the second semester when this experiment began. This initial difference will have to be controlled statistically when examining the mathematics learning gains after the course. Similarly, the restructured groups were higher on n Affiliation at the outset. This difference also must be controlled when examining subsequent changes in n Affiliation. The conjunction of these two initial differences does not immediately suggest some more basic pattern of underlying differences between the two groups.

RESULTS

Our informal observations of the restructured classrooms and interviews with students suggested that two factors might be important in understanding the other results, neither factor had we attended to sufficiently before the experiment began. First, the teachers along with "some Harvard Psychologists" had created the game rules, not the students. Second, the Quincy grading system required mid term grades. To maintain some equity among the various ninth grade classes and to conform to the regulations, students were required to complete a minimum of two chapter contracts per half semester. Combined, these two features had the effects of decreasing the control students had over the rules that governed their mathematics lives and effectively obviated the self-pacing option, particularly for the slower students. The following excerpts from Mr. McIntyre's report of his observations and interviews catches the flavor of these informal findings:

Footnotes for Table 9.1

1. In this table the number beneath the mean scores in each case is the standard deviation.
2. California Test of Mental Maturity, given in October, 1966, slightly more than two years prior to the course.
3. When data was missing for individuals the effective sample size is given in the parentheses.
4. These scores are percentile ranks based on national norms obtained in 1963.

> "There has been a lot of complaining, particularly from the girls. This leads me to believe that we made a serious error in the beginning. We were more concerned with having similar structures (to the original math game) than in having structures in which these students could work comfortably. They had no voice in the creation of the class structure. We let them talk about it several times, but minor changes were all we would permit.
>
> In the original "Math Game", my fifth grade students participated in determining the structure and were able to effect change in it from time to time as problems arose. Moreover, they also participated more in administering the game, taking over the printing of paper money and some checking of each other's completed work. In the algebra game the structure was already complete when presented to the students, and gave them little opportunity to change it, except in minor procedural ways. This meant, to the average student, that he was now expected to learn algebra on his own, something he felt somewhat unprepared and often unwilling to do. Although the teachers participated willingly and enthusiastically, it was known by the students that this was a 'Harvard project' and therefore not the teachers' own design. Instead of building a "halo effect", this seemed to mean to many students that some Harvard types were experimenting with them at the possible expense of their grades on permanent record cards.
>
> Also, the system seems more rigorous than I had originally intended, partially because of the fears of the classroom teachers that a permissive structure would lead to wholesale cheating. One consequence of the rigor was a large number of 'Incompletes' at the end of the third grading period (mid-term, second semester)."

Although decision-making on quantity variables was available, the grading system of the city made the time dimension a sham. Grades were of necessity submitted to the office for the permanent record cards twice during the semester, thus making it mandatory that a student finish one chapter per month in order to receive a passing grade. This meant that the same time schedule was adhered to (as a standard) in the algebra game classes as in the traditional classes. In practice this time schedule takes away not just one factor in the choice matrix, but renders most of it inoperable for most people. The message now reads to the student: "Nothing has really changed except that you now have to do it without lectures and demonstrations by the teacher." Although we paid lip service to individual pacing, the actuality was very close to lock-step.

These informal findings are supported in part by students' responses to an "Algebra class questionnaire" administered at the end of the semester.

Table 9.2

Mean responses of boys and girls in the Normal and Restructured algebra classes to the algebra questionnaire

Questions	BOYS			GIRLS		
	Normal (n=18)[1]	Restructured (n=21)	P	Normal (n=19)	Restructured (n=20)	P
1. Preference for math first semester among other subjects (1 to 7)	3.89 2.00[2]	3.40 1.93	n.s.	3.74 1.63	3.45 1.91	n.s.
2. Preference for math second semester among other subjects (1 to 7)	4.11 1.78	3.60 2.09	n.s.	3.56 1.42	4.05 2.06	n.s.
3. How much did you like math second semester compared to first semester? (1 = much less, 5 = much more)	2.56 1.20	2.48 1.40	n.s.	3.32 1.20	2.60 1.23	n.s.
4. How hard did you work (1 = much more first semester, 5 = much more second semester)	2.83 1.54	3.10 1.18	n.s.	3.11 1.33	3.05 1.36	n.s.
5. How much did you learn? (1 = much more first semester, 5 = much more second semester)	3.06 1.43	2.43 1.21	n.s.	3.53 1.02	2.50 1.28	$t=2.79$ $p < .01$

1. The effective sample size is less than the total sample in each group due to absent class members the day of testing.

2. The two numbers given in each all are the mean and standard deviation for the group.

Restructuring the algebra class did not significantly increase how much students liked learning mathematics, nor how hard they worked. The girls in the restructured mathematics class, however, believed they learned much less. This, apparently, is the most salient aspect of the complaining reported by Mr. McIntyre.

It is possible to identify what students liked most and least about the restructured class by looking at the aspects of learning they most and least wanted in their other classes.

Table 9.3

Number and per cent of students who wanted aspects of the Algebra game incorporated in their other classes

Algebra game characteristic	Boys (n=21)		Girls (n=20)		Overall Ranking
Being able to work with others	19/21	91%	19/20	95%	1
Go at your cwn speed	20/21	95	17/20	85	2
Work in or out of class	19/21	91	17/20	85	3
Choosing value of tests and homework	15/21	71	16/20	80	4
A point system for completed work	15/21	71	15/20	75	5
Setting your own goals for grades	13/21	62	16/20	80	6
Not many class lectures	11/21	52	11/20	55	7
Setting own deadlines	13/21	62	8/20	40	8
Signing contracts	10/21	48	5/20	25	9

These results are a little bit difficult to interpret since it is not clear that all of these features were in fact part of the Algebra game, e.g. "Go at your own speed". However, the data can be read as indications of generally desirable and undesirable features. The three top ranked items (being able to work with others, go at your own speed, work in or outside of class) suggest that students want several types of freedom for how they learn that do not often exist in normal classrooms. At the same time they do not appear to want the responsibility of deciding the learning goals for themselves; i.e. signing contracts, setting own deadlines, few lectures, setting their own grade goals.

Results from the Learning Environment Inventory augment these findings and clarify the picture of how students felt in the Algebra game compared to Normal algebra.

Table 9.4

Comparison of Normal and Restructured Algebra classes on 14 dimensions of classroom climate measured by the Learning Environments Inventory

Dimensions of climate		Normal (n=39)	Restructured (n=43)	P
Intimacy	mean	1.92	2.09	**
	SD	0.46	0.45	
Friction	mean	1.38	1.48	
	SD	0.51	0.37	
Cliqueness	mean	1.62	1.83	
	SD	0.39	0.32	
Satisfaction	mean	1.47	1.34	
	SD	0.47	0.34	
Speed	mean	1.25	1.58	***
	SD	0.38	0.45	
Difficulty	mean	1.39	1.63	*
	SD	0.55	0.44	
Apathy	mean	1.34	1.40	
	SD	0.50	0.50	
Favoritism	mean	1.03	1.07	
	SD	0.60	0.45	
Formality	mean	1.70	1.82	
	SD	0.38	0.38	
Goal Direction	mean	1.77	1.44	*
	SD	0.33	0.92	
Democratic	mean	1.55	1.46	
	SD	0.33	0.40	
Disorganization	mean	1.08	1.39	**
	SD	0.41	0.41	
Diversity	mean	1.70	1.78	
	SD	0.38	0.32	
Environment	mean	1.63	1.63	
	SD	0.54	0.35	

*$p < .05$ two tails, **$p < .01$ two tails, ***$p < .001$ two tails.

Students in the Algebra game felt it was faster, more disorganized, more difficult and less goal oriented. It was seen as more intimate.

All of these data combined suggest that students in the Algebra game felt more pressured and controlled than students in the Normal algebra class. While students were given freedom, in theory at least, to set their own goals, the school-wide requirements for grading periods effectively washed out that option. Many of the available tactics for learning were appreciated. However, students did not want to have so much responsibility for setting their own learning goals. The fact that teachers were no longer setting the goals made the class seem less goal directed and more disorganized. The teacher combination of making more options available, reducing teacher control and requiring the same pace as in other classes did not produce a leap in the general level of student joy, energy for mathematics, and satisfaction; but instead, a sense that the Algebra game was faster and more difficult. It is clear that the students in the experimentally restructured math classes did not experience the same sense of liberation for learning, or general enthusiasm felt by the boys and girls in Mr. McIntyre's fifth grade math class.

Beyond these student perceptions it is possible to assess several types of gains. Did students' motivation change? Did their attitudes change? Did they learn more? Table 9.5 presents these data.

Table 9.5

Mean post course scores on measures of motivation, attitudes and mathematics achievement for boys and girls in Normal and Restructured mathematics classes

Post course Measures	BOYS			GIRLS		
	Normal (n=22)	Restructured (n=22)	t,p	Normal (n=21)	Restructured (n=23)	t,p
Motivation						
n Achievement	0.14 2.73[1]	1.24 2.68[2] (n=21)	n.s.	1.14 2.46	1.65 3.30	n.s.
n Affiliation	3.50 2.50	2.05 1.60 (n=21)	t=2.28 p < .02[3]	3.29 2.41	2.17 2.33	t=1.55 p < .10
n Power	1.82 2.20	3.05 2.52 (n=21)	t=1.70 p < .05	2.38 2.56	2.52 2.63	n.s.
Attitudes						
Realism of vocational decision-making	22.11 30.62 (n=19)	20.32 29.45 (n=19)	n.s.	5.32 31.30 (n=19)	2.41 30.98 (n=22)	n.s.
V Achievement	2.77 4.13 (n=17)	4.06 2.84 (n=17)	n.s.	3.11 3.80 (n=18)	1.84 3.24 (n=19)	n.s.
Internality	2.94 4.01 (n=17)	3.94 3.61 (n=17)	n.s.	4.58 2.99 (n=19)	3.21 3.08 (n=19)	n.s.
Debilitating Test Anxiety	1.59 5.92 (n=17)	2.83 5.70 (n=18)	n.s.	0.74 5.04 (n=19)	2.00 6.66 (n=19)	n.s.
Self Esteem	0.59 2.53 (n=17)	1.17 3.37 (n=18)	n.s.	1.68 2.34 (n=19)	2.16 2.71 (n=19)	n.s.
Cooperative Mathematics Test (Algebra) June, 1968 Form B	142.00 7.35 (n=21)	149.82 8.97	t=3.13 p<.005	144.80 9.29 (n=20)	149.09 8.53	n.s.
Tenth grade mathematics grade point average	75.30 8.49 (n=17)	71.66 8.50 (n=18)	n.s.	69.23 5.01 (n=13)	73.34 4.72 (n=12)	t=1.78 p < .05

[1] In each case the number beneath the mean is the standard deviation.

[2] When data were missing for individuals, the effective sample size is given in parentheses.

[3] All reported p values are 1 tail because predictions were made favoring the group in the restructured classes.

Although several of these measures show statistically significant differences, it is possible that they are either continuations of initially different levels (e.g. mathematics test scores) or evidence of regression to the mean (e.g. n Affiliation scores). In both cases, we must control statistically for initial differences and then see if these results remain. This was done non-parametrically by dividing the initial scores into high, middle and low sub-groups, and then comparing the final scores of the restructured and normal classes equated for initial scores. The differences between the two classes for each of the levels of initial scores were then summed arithmetically. By this procedure the differences in mathematics learning wash out, i.e. The final differences in the cooperative mathematics test and in tenth grade mathematics averages reflect the original differences in mathematics achievement.

The results for n Affiliation and n Power do not change dramatically after controlling for initial differences.

Table 9.6

Differences in final affiliation and power motivation between restructured and normal algebra classes for boys and girls after controlling for initial differences.

a) Boys' affiliation motivation

Pre-course n Aff.	Number of cases: Normal	Restructured	Number of cases above (+) or below (-) median change for that level of initial n Affiliation			
			Normal		Restructured	
			-	+	-	+
High (4 or more)	4	8	2	2	4	4
Middle (1,2,3)	6	11	1	5	8	3
Low (0)	12	3	5	7	2	1
Total	22	22	8	14	14	8

	-	+
Normal	8	14
Restructured	14	8

$x^2 = 3.27$
$p < .10$,
two tailed

Table 9.6 continued next page.

Table 9.6 (continued)

b) Girls' affiliation motivation

Pre-course *n* Aff.	Number of cases: Normal	Restructured	Number of cases above (+) or below (-) median change for that level of initial *n* Affiliation			
			Normal		Restructured	
			-	+	-	+
High (4 or more)	6	10	2	4	7	3
Middle (2,3)	6	6	1	5	3	3
Low (0,1)	9	6	3	6	4	2
Total	21	22	6	15	14	8

	-	+
Normal	6	15
Restructured	14	8

$x^2 = 5.31$
$p < .02$,
two tailed

c) Boys' power motivation

Pre-course *n* Power	Number of cases: Normal	Restructured	Number of cases above (+) or below (-) median change for that level of initial *n* Affiliation			
			Normal		Restructured	
			-	+	-	+
High (3 or more)	7	7	5	2	2	5
Middle (1,2)	8	7	5	3	0	7
Low (0)	7	9	4	3	5	4
Total	22	23	14	8	7	16

	-	+
Normal	14	8
Restructured	7	1

$x^2 = 4.99$
$p < .02$,
1 tail

d) Girls' power motivation

There were no original or final differences in *n* Power for girls before or after controlling for initial differences.

This re-analysis indicates that the Algebra game significantly decreased the girls' n Affiliation in comparison to the girls in the normal algebra class. There was a trend in the same direction for boys. The principal impact of the algebra course on the boys' motivation was in significantly increasing their concerns about power.

It is important to go beyond an analysis of the simple treatment effects to an examination of the possible interaction of treatments with personality type. For instance, perhaps students with initially high n Achievement might perform best in a restructured class, whereas students low on n Achievement might do significantly better in a normal algebra class. The yield measure chosen for this interaction analysis was gain in Cooperative Algebra test score because it is a highly reliable measure of a clearly intended yield and also because in this sample gains on this test are not significantly correlated with initial differences in algebra achievement. Unfortunately, none of the initial attitudes nor any of the motives predict how well a student will do in either treatment condition. However, intelligence does predict algebra gains for boys. Seventeen of 22 boys in the restructured algebra class were either below the median IQ and below the median algebra gain or above the median IQ and above the median algebra gain, compared to only 7 of 20 boys in the normal algebra class ($\chi^2 = 7.65$, $p < .01$, two tailed). In other words, the higher the IQ, the more a boy gains in algebra in the restructured class. The reverse is true in the normal class; the higher the IQ, the less the boy gains in algebra score. When boys in the Algebra game, above and below the median IQ, are compared in terms of how much they like mathematics second semester compared to first semester, high IQ boys like math significantly more (Mann-Whitney test, $z = 2.39$, $p < .02$, two tailed). This difference does not occur between the high and low IQ boys in the normal classroom since there was no change in the way they learned in the second semester. Intelligence level among the boys is the only factor that appears to effect the level of productivity and satisfaction in the Algebra game.

DISCUSSION

This research presents evidence that restructuring the way a student learns does influence his motivation. If a brief instructional set can temporarily influence motivation, as was the case in the original research deriving the n Achievement scoring system, it simply stands to reason that a semester long change in the instructional process (a massive change in comparison), should influence the salience of students' motives. The problem of course is that the theory is not sufficient to the task of specifying what structural changes influence what motives i.e., there were a number of predictive errors.

The students felt shaped by rules they had no part in making and pressured by the requirement to complete two chapters each half semester. They perceived the classroom climate as faster, more disorganized, more difficult, less goal oriented, and, as indicated earlier, more ultimate. Students, in general, wanted more teacher guidance through traditional lecture presentations and less personal responsibility for setting their own goals. Beyond this general reaction, boys and girls differed in their responses in several ways. Girls believed they learned less through the Algebra game, although in fact they learned just as much. Boys need for power increased significantly, presumably in response to their desire to get more control of what was happening to them. There was a further difference among the boys in the algebra class. The brighter boys learned significantly more and liked the Algebra game significantly more than the slower students. Perhaps the structural requirement for more personal responsibility in decision making and the fast pace enabled them to work up to their ability, whereas these same forces tended to disable the slower students, who needed a slower pace and more teacher guidance.

Another difference between boys and girls is that the Algebra game decreased girls' need for affiliation. Simply making the opportunity available to work in groups resulted in more group work as observed by Mr. McIntyre, and more "intimacy" as reported by girls and boys in the Learning Environments Inventory. This was one of the features the girls wanted most to be introduced in other classes. As a result of these satisfying affiliative activities, apparently, there was less concern with "establishing, maintaining or restoring a positive effective relationship with another person" (Heyns, Veroff, and Atkinson, 1958)*. Given the ubiquitous grapevine in junior high school, girls in the other algebra classes probably found out about the fun they were not having. The realization of their deprivation could account for the increased need for affiliation they expressed in their TAT stories at the end of the second semester. These same general results occur for boys, but are less pronounced.

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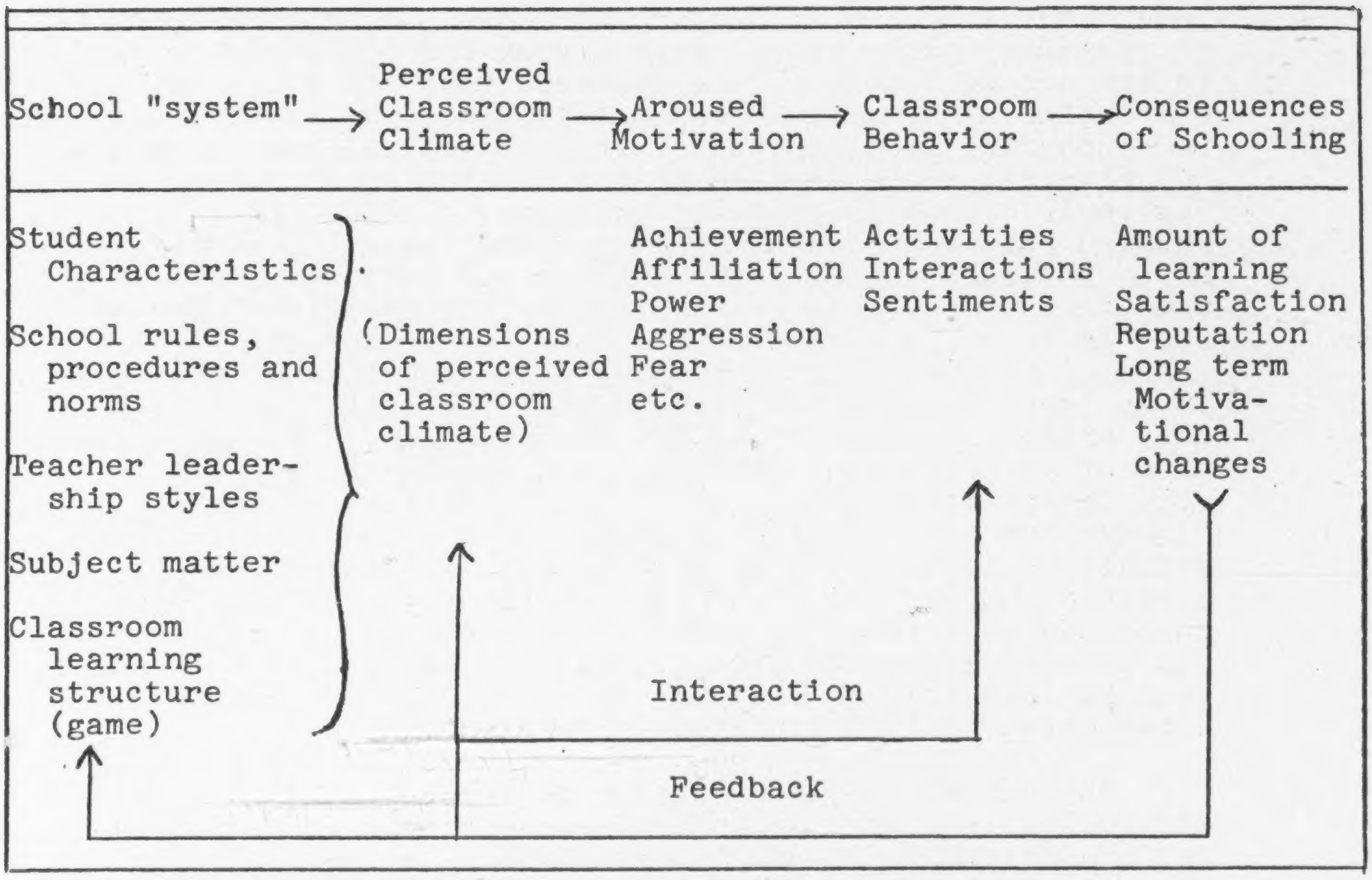
*Heyns, R.W., Veroff, J., Atkinson, J.W. "A scoring manual for the affiliation motive". In J.W. Atkinson (ed.) Motives in Fantasy Action and Society, Princeton, New Jersey, Van Nostrand, 1958, pp. 205-218.

These results make it easier to understand why the Algebra game did not increase the long term usefulness of achievement motivation in the previous experiment. Specifically, we have no data indicating that the Algebra game constituted practice in achievement motivation.

Above and beyond all this retrospection, the fact stands out that, at best the theory of how structure influences motivation is not wrong, but insufficient for the prediction task. There are several other factors besides the structure of the Algebra game that produced the measured changes. First, there are certain student characteristics that made a difference. Girls responded differently than boys. High IQ boys responded differently from low IQ boys. Second, there were some school rules, procedures and norms that influenced the results. Students had to complete two chapters per half semester, thus introcuding a fixed minimal pace that was a maximum pace for many students. The sheer contrast between first and second semester algebra and the contrast with the normal procedures in the rest of the school may have caused some confusion and a sense of disorganization about such issues as what you get grades for, the role of the learner and what a teacher is supposed to be. Third, the leadership styles of the teachers probably made a difference. Just as the morale and performance of teams are determined in part by the role of the coach even though the game rules are fixed. Fourth, the subject matter itself, although it was not an experimental variable in this experiment, probably helps determine the process of learning. All of these factors, and perhaps several others, combine interactively to produce the motivational climate in the classroom, the motives aroused, the classroom bheavior and ultimate results. These relationships can be portrayed most succinctly in tabular form.

Table 9.7

Motivation and climate model of classroom behavior
(adapted from Litwin and Stringer, 1968, p. 41)*



School "system" →	Perceived Classroom Climate →	Aroused Motivation →	Classroom Behavior →	Consequences of Schooling
Student Characteristics School rules, procedures and norms Teacher leadership styles Subject matter Classroom learning structure (game)	(Dimensions of perceived classroom climate)	Achievement Affiliation Power Aggression Fear etc.	Activities Interactions Sentiments	Amount of learning Satisfaction Reputation Long term Motivational changes

If something like this model operates in actuality, it is easier to understand how slippage occurred between the restructuring and the intended motivational outcomes. It is obvious that to control the aroused motivation in the classroom, more of the "School system" variables must be controlled.

Of the several "School system" variables the teachers' leadership style probably has as direct and pervasive an influence as the rule structure of learning. Although no conscious systematic training was provided for the teachers of the Algebra game, a new style was demanded by the game

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*G. H. Litwin, R.A. Stringer, Motivation and Organizational Climate, Division of Research, Graduate School of Business Administration, Harvard University, Boston, 1968.

(from lecturer-director to coach) and some informal training probably occurred. It is my speculation (for unfortunately I do not have any hard data on this), that the changed leadership style was learned during the installation process by modeling the style of the installer. Even though Mr. McIntyre spent time with the two algebra teachers in the afternoons several days a week for six weeks prior to the second semester, the teachers felt the press of completing after-school responsibilities, the extra load, the impending deadline, the rush, the natural confusion and disorganization of the new system as it was being adapted for their situation, and the pressure to adjust to the Harvard research project's needs. There was, in addition, Mr. McIntyre's engaging personality and genuine spirit of comraderie among fellow travelers as the experiment was set up. In short, the classroom climate as measured by the Learning Environments Inventory also describes accurately, in my impression, the climate during the installation process prior to the start of the Algebra game. The installation of some innovations makes this hypothesis explicit. e.g. learning how to conduct "open education" or the "integrated day" requires learning from a model. In other situations it may be less obvious e.g. installing computer assisted instruction, language laboratories, new equipment purchased by mail. How these innovations are used probably has as much effect on students as the innovations themselves, yet the installation process where the "how" is learned often gets far less conscious attention and care.

In general the more sources of variance that can be controlled, the more an innovator can predict the outcome for students. That much is axiomatic. Theoretically, the sources of variance extend back beyond the classroom to the school norms, procedures, rules, policies and back still further to the community of which the school is a part. Nevertheless, it is impractical and unreasonable to make the working assumption that influencing children's motivation in a classroom requires prior change in the larger community, although this may be true to some degree. The practical question is how many and how much of the social systems surrounding the classroom must be controlled to obtain a desired level of student change. A workable solution lies somewhere between the highly focused attempt to change one element like the classroom structure, and the rather broad focus on changing the several meta-systems surrounding the classroom.

Chapter 10

A Training Unit on Classroom Climate

Gary Bergthold and David C. McClelland

In the course of the research conducted by the Achievement Motivation Development Project, it became clear that the most effective achievement motivation training included changes in classroom climate that rewarded and reinforced achievement behavior. Students who were given achievement motivation training but who returned to classrooms where personal responsibility and student-determined standards of performance were not encouraged usually failed to exhibit gains in school-related behavior. It became clear that effective intervention to change student motivation in school must involve both training students in achievement motivation (preferably by their own teachers) and training teachers to promote achievement-related behavior in their classrooms.

The term "classroom climate," as used here, derives from the concept of organizational climate, described by Litwin and Stringer in their monograph, Motivation and Organizational Climate (Boston: Harvard Graduate School of Business Administration, 1968). Paraphrasing Litwin and Stringer's definition of organizational climate, we define classroom climate as follows:

> Classroom climate is a set of measurable characteristics of the social environment of the classroom, as perceived by the students and assumed to influence their motivation and behavior.

The theory on which this unit is based assumes that in all reasonably healthy students, a number of different needs or motives can potentially be aroused, depending on the cues presented by the environment.

The Classroom Climate Questionnaire

The classroom climate questionnaire was evolved from the organizational climate survey originally designed by Litwin and Stringer. An early version of the questionnaire, which was essentially a modification of the Litwin and Stringer instrument, proved to be inadequate to measure classroom climate as many of the items proved to be either irrelevant or not understandable as applied to the classroom setting. For this reason, an entirely new set of items was written within the original framework of the Litwin-Stringer theory. This questionnaire contained 42 items which students answered Strongly Agree, Agree, Disagree, or Strongly Disagree. A copy is appended with instructions for administering it. It was administered to 543 students primarily in Junior High School (Grades 7-9) in some 28 different classrooms. A factor analysis of the intercorrelations among the answers to the questions revealed that there were

5 independent scales corresponding roughly to those obtained by Litwin and Stringer in their study of organizational climates.

Table 10.1 lists the items with their loading on the corresponding factor. Unfortunately no factor came out for the responsibility dimension which is theoretically of great importance as a support in the classroom for developing achievement motivation. Perhaps this is because in Junior High School large amounts of responsibility for self-directed learning are not ordinarily given to students. However 3 items were found which intercorrelated significantly in most classrooms which seemed to define this dimension reasonably well. And these were made into a scale score for a sixth climate dimension. Table 2 gives a brief description of what each of the dimensions measures and which items are scored positively or negatively for it.

Norms

Average scores for each of the 28 classrooms on each of the six dimensions were computed and averaged to provide the norms for the climate profile chart used in the teacher workshops for developing motivation in the classroom. See below.

Notes to the trainer on how to present the classroom climate unit in a motivation workshop for teachers

Three multimedia classroom climate presentations have been prepared as flexibly as possible to allow a variety of formats suitable to different training situations and time constraints. The following format is suggested as it has been used satisfactorily with several different groups of teachers.

Preparation and pre-work

The classroom climate unit has proved most effective when it is presented toward the end of the second day of a three-day (8-10 hrs./day) training program. Preceding the climate unit, participants should receive the following information and experiences. See Alschuler, McIntyre, and Tabor, Teaching Achievement Motivation, Education Ventures, Inc., Middletown, Connecticut, 1970.

1) Unfreezing--a variety of training techniques designed to encourage an atmosphere of honest self-evaluation, receptivity to constructive feedback, and desire for change. Successful units used in classroom climate training have included explicit contract setting between trainers and participants, "Who Am I?" sessions and a school simulation game ("The High

Table 10.1

Rotated Factor Loadings for Classroom Climate Questionnaire

	Teacher support	Factor 1
8.	We like to talk to the teacher outside of this class	+.699
29.	The teacher in this class really cares about all of us.	+.634
1.	I feel that the teacher likes us.	+.602
10.	We often get a chance to decide what we want to do in this class.	+.595
24.	The teacher is really interested when students in this class come up with ideas of their own.	+.555
25.	The teacher in this class always encourages me to do my best.	+.523
15.	The teacher makes you feel dumb if you ask for help in this class.	-.503
22.	In this class the teacher doesn't help us much.	-.509
	Togetherness	**Factor 2**
35.	I get along with almost everyone in this class.	+.769
28.	It is hard to be friends with some of the students in this class.	-.749
	Morale	**Factor 3**
2.	The students in this class rarely get out of hand or disobey.	+.660
18.	Students in this class would work hard even if the teacher left the room.	+.542
7.	I'm proud to belong to this class.	+.466
16.	There's a lot of cheating in this class.	-.639
40.	Someone is always doing something wrong in this class.	-.674
20.	Sometimes I feel this class is falling apart.	-.678

Table 10.1 contd

Rotated Factor Loadings for Classroom Climate Questionnaire

	Standards	Factor 4
9.	Our teacher insists that we hand our homework in on time.	+.632
4.	You really have to know your work in order to do well in this class.	+.615
23.	The teacher always insists that we be well behaved and polite.	+.543
30.	The teacher doesn't pay much attention, even if we are too noisy.	-.430
39.	This class is easy enough so that no one has to work too hard.	-.462

	Organizational clarity	Factor 5
41.	I usually understand what the teacher is trying to do in this class.	+.563
5.	I get graded fairly in this class.	+.561
26.	Students in this class usually know how well they're doing.	+.548
27.	We know where we're going in this class.	+.496
13.	When I have finished my work, I know what to do next.	+.420
34.	Our teacher goes too fast and the students get confused.	-.556
6.	I often feel confused in this class.	-.585
32.	No matter how hard I work, I can't seem to improve in this class.	-.608
11.	I find it hard to tell whether or not I'm doing well in this class.	-.671

Cluster of items defining responsibility dimension

Positive

10. We often get a chance to decide what we want to do in this class.

31. We all work at our own speeds in this class.

Negative

3. The teacher doesn't like us to read ahead or study something different from what is assigned.

Table 10.2

Scoring Key Form A
Classroom Climate Survey
D.C. McClelland and Gary Bergthold

	Items Scored			
Scale Definitions	Positive		Negative	
	Strongly Agree = 4		Strongly Agree = 1	
Affiliation Area				
1. Teacher warmth and support--teacher provides warmth, support and encouragement. mean x10 = 30.5 SD = 3.1	1 8 10	24 25 29	15 22	
2. Togetherness--the students like each other and are friendly in class. mean x10 = 30.2 SD = 2.4	35		28	
Power Area				
3. Morale--the students obey, are proud to belong to the class, do not cheat, etc. mean x10 = 24.8 SD = 4.3	2 7 18		16 20 40	
4. Standards--teacher holds up high standards of work and good order. mean x10 = 28.7 SD = 3.1	4 9 23		30 39	
Achievement Area				
5. Organizational clarity, knowledge of results--students feel they are graded fairly, know when they do well. mean x10 = 28.7 SD = 2.3	5 13 26	27 41	6 11 32	34
6. Responsibility--students work at their own speed, have a chance to make decisions on their own. mean x10 = 26.7 SD = 3.1	10 31		3	

School Game" created by Richard Borofsky of the Harvard Graduate School of Education).

2) The three social motives--Participants should be familiar with the thought and action characteristics of achievement, power, and affiliation motivation. These units can be handled in a number of different ways, but it is important that the participants experience the effects of these motives on their own behavior. In the past, training designs have included games and exercises that developed the three motivational climates so that participants could see how they differ. For example, participants played the ring toss or darts-dice game to understand achievement motivation; the blindfold helping relationship exercise produced affiliation motivation; and the disarmament game stimulated power motivation. It is clear, of course, that these games do not stimulate "pure" motives unmixed by others (e.g., the ring toss game usually stimulates a great deal of affiliation as participants strive for achievement goals), but the trainer should point out that no climate produces only one type of motivation. In fact, it should be clear to teachers that the typical classroom situation encourages a variety of motivational responses from students and that an effective classroom manager is able to vary the climate to encourage motivation that is appropriate to the learning objectives.

In addition to the motivational "games," it is useful to give teachers an introduction to the thought patterns associated with the three motives.* It is generally sufficient to teach only the major criteria for scoring the motives (not the scoring sub-categories), perhaps by asking the teachers to score their own TAT stories. It is also very effective to ask teachers to bring TAT stories written by their students for scoring. At thispoint the trainer should explain the relationship between individual motivation and climate variables.

3) The paper "What is the best classroom climate?" by Professor David C. McClelland should be read before the climate unit is presented. It appears in Appendix III. This paper provides essential information about the relationship between motivation and classroom climate.

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* When classroom climate training follows a course in teaching achievement motivation, teachers will be quite familiar with the n Ach scoring system but would probably need additional information.

Teachers' data collection

The classroom climate unit was designed to enable teachers to compare their own students' perception of classroom climate to those illustrated by multimedia presentations and to norms based on "typical" classrooms. The classroom climate questionnaire should be administered by the teachers to their students about a week before the training program (enough time is needed to score the questionnaires and place the results on the profile sheet). Most teachers prefer to obtain scores from at least two classes--perhaps their "best" and "worst" class--to check the vaildity of the questionnaire and to analyze different types of classrooms. Although it is rather time consuming, it is very helpful to have teachers mark at least some of the questionnaires from their students so that they can understand the make-up of the scales.

Each teacher should have a climate questionnaire profile from at least one class during the classroom climate presentation. The teacher's own comparison of his profile to the norms and the profiles of the three teachers in the multimedia presentation forms the basis of planning for climate changes that follows the climate unit. Suggestions for incorporating teachers' data with the climate unit are presented below.

Order of Presentation and Discussion

The multimedia climate unit depicts three classrooms, each of which is followed by a short interview of the teacher, who discusses his objectives and teaching philosophy. Each classroom takes about ten minutes to present, and the teacher interviews last from three to five minutes each. The presentations can be stopped for discussion between classrooms or between a particular teacher's classroom and his interview.

Before showing the climate unit, the trainer should describe the objectives of the unit and briefly review the relationship between student motivation and classroom climate. A blank profile sheet should be given to each teacher and the climate scales should be described (it is very helpful to distribute copies of the questionnaire as well since the scales can be understood best by referring to the items which make them up).

Very little need be said about the multimedia presentation itself, as it is preceded by a recorded introduction by Professor McClelland which points out to the teachers what things they should look for and what questions they should keep in mind. The introduction also makes the important point that teachers should look beyond the differences in subject matter taught in the three classrooms to differences in teaching style and classroom climate that transcend subject-related differences.

Sambuceti

The first classroom is that of Mr. Sambuceti, a ninth grade history teacher. Mr. Sambuceti teaches with a rather traditional, but effective, lecture style that will be very familiar to most teachers. They should view the classroom and then rate the climate on a profile sheet as they feel it would appear to students in Mr. Sambuceti's class.* The trainer may allow about five minutes of discussion about the Sambuceti style and then continue the presentation of his interview regarding the class. In the interview, Mr. Sambuceti describes himself as a "benevolent dictator," a self-image that is not uncommon among teachers, but is rarely stated so dramatically. Following the interview, the Sambuceti profile sheet should be handed out so that teachers can compare their ratings to those of the students from Mr. Sambuceti's class.

Most teachers are rather surprised at what they find in the Sambuceti profile. They usually think students would rate him much lower on "warmth and support" and "togetherness" than his students actually rated him. Obviously they like him, and yet many teachers object to his style.

The trainer should hold discussion to about ten minutes, considering such questions as the following:

1) Is the Sambuceti classroom as atypical as it appears on the profile sheet? (climate scores way above the norm line except for the Responsibility Scale)

2) Do students expect this style of teaching? How do they feel about it?

3) Should Sambuceti encourage more responsibility on the part of the students?

4) What about his own estimate of his classroom climate? How much do teachers know about how their students feel about their classrooms? Is it important to know?

5) What motives would his classroom encourage? (achievement, affiliation or power)

Diamondopolis

The trainer should move right along to the Diamondopolis classroom, even though discussion is not completed on the Sambuceti classroom, as the contrasts between the two provide a much richer source of discussion.

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* Ratings should be made relative to the norm line on the profile sheet. Ratings above the norm line are "high," near the norm line are "average," and below the norm line are "low." No attempt should be made to compare scores across scales as they are not comparable in absolute terms.

Mrs. Diamondopolis teaches mathematics with a completely individualized approach, tutoring each student individually at her desk on a regular revolving schedule. The trainer should not make a break between the classroom presentation and the interview, but should encourage comparisons between the Diamondopolis and Sambuceti classrooms following the interview. The Diamondopolis profile should be handed out to facilitate discussion. [At his option, the trainer may wish to have the teachers fill out a profile sheet on Diamondopolis before handing out the actual profile. If time permits, this practice is useful to build the teachers' observational skills.]

If they don't bring it out in the discussion, note that togetherness is much lower in the Diamondopolis classroom, as is morale, although it is above the norm. Note also her pupils feel they have much more responsibility, as one would expect from her individualized mode of teaching.

Questions might center on whether the children spend too much time waiting in line, why they don't seem to get on together, why she is perceived as above average in warmth although she is obviously critical of the children. Note she is better at estimating what her students think than Mr. Sambuceti is. Does this matter?

Breslin

Next the trainer should show both the Breslin classroom presentation and the interview without a break unless time and interest permit teacher scoring of the presentation. Discussion should begin on the Breslin classroom itself before moving to a comparison of the three classrooms.

Mr. Breslin's profile is much nearer average on most dimensions than the others, yet he seems to be on top of a rather complex teaching arrangement. Has he some quality not measured by the profile like classroom management skill?

Why does he overestimate the morale in the class? Does the complexity of the class permit the students to do things he doesn't observe?

How would you contrast his teaching style with Mr. Sambuceti's? Which is better and for what purpose? Hand out the profile chart comparing the two men.

Note if it doesn't come out in the discussion that Mr. Sambuceti allows too little responsibility to develop achievement motivation; furthermore he is very much higher than Mr. Breslin in the power authority-discipline area which produces an orderly classroom but which may also encourage power motivation in the children. On the other hand, Mr. Breslin allows less student responsibility than Mrs. Diamondopolis. Is it possible to allow the children to be too much on their own? Achievement motivation research shows that parents who allow neither too much nor too little independence tend to develop higher achievement motivation in their children. How do you determine how much responsibility is the right amount?

Goal Setting

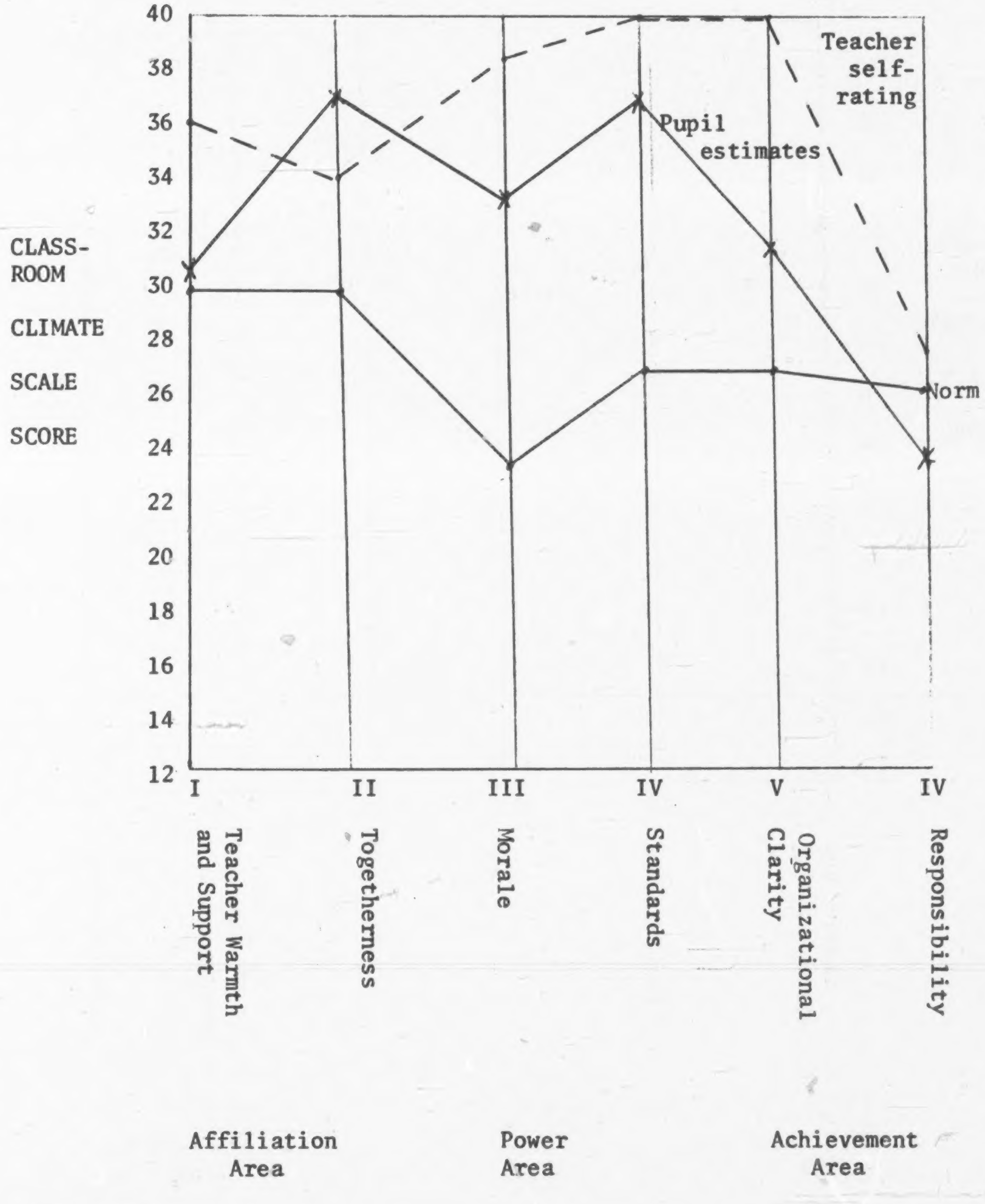
The classroom climate unit should end with teachers setting goals for changes in the climates of their own classrooms. These changes may be based on climate questionnaire scores that the teacher wishes to change or on other feedback that the teacher has received before or during training. Whenever possible, these change goals should be stated in terms of scores on the climate questionnaire. The change goals must be backed up with detailed plans of action describing concrete changes the teacher will make in his teaching style and classroom organization in order to achieve his climate change goals.

Follow-up

Approximately two months following the classroom climate training, the teacher participants should re-administer the climate questionnaire to the same classes they had surveyed before training. Changes in climate scores are good indicators of the results in classroom climate of modifications in teaching style and classroom organization. By trying out different modifications and measuring the effects on the climate questionnaire, teachers can become experimenters in the classroom. Thus they will show the attitude toward teaching this training unit was designed to develop.

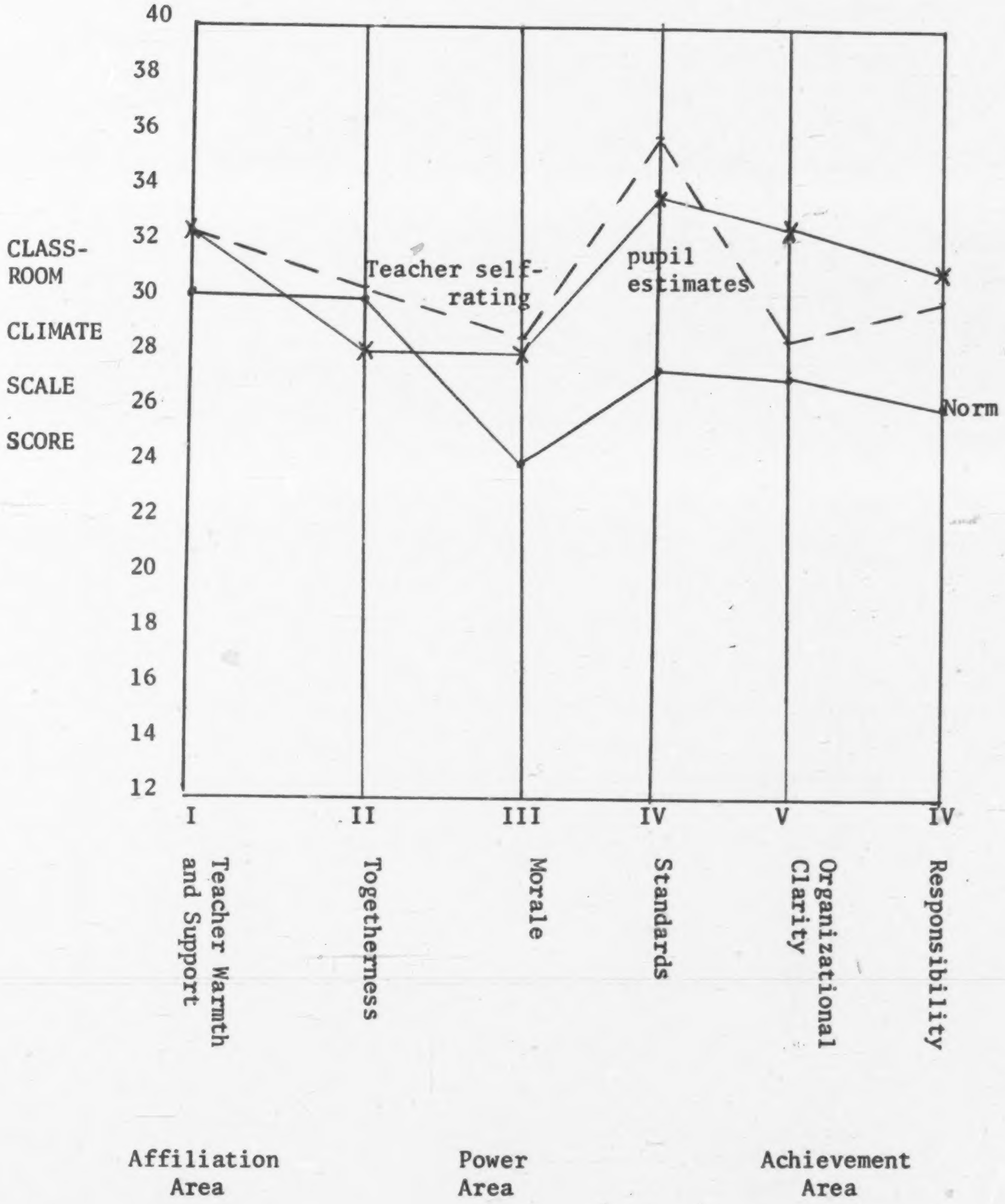
(SEE APPENDIX III)

PROFILE SHEET FOR CLASSROOM CLIMATE QUESTIONNAIRE



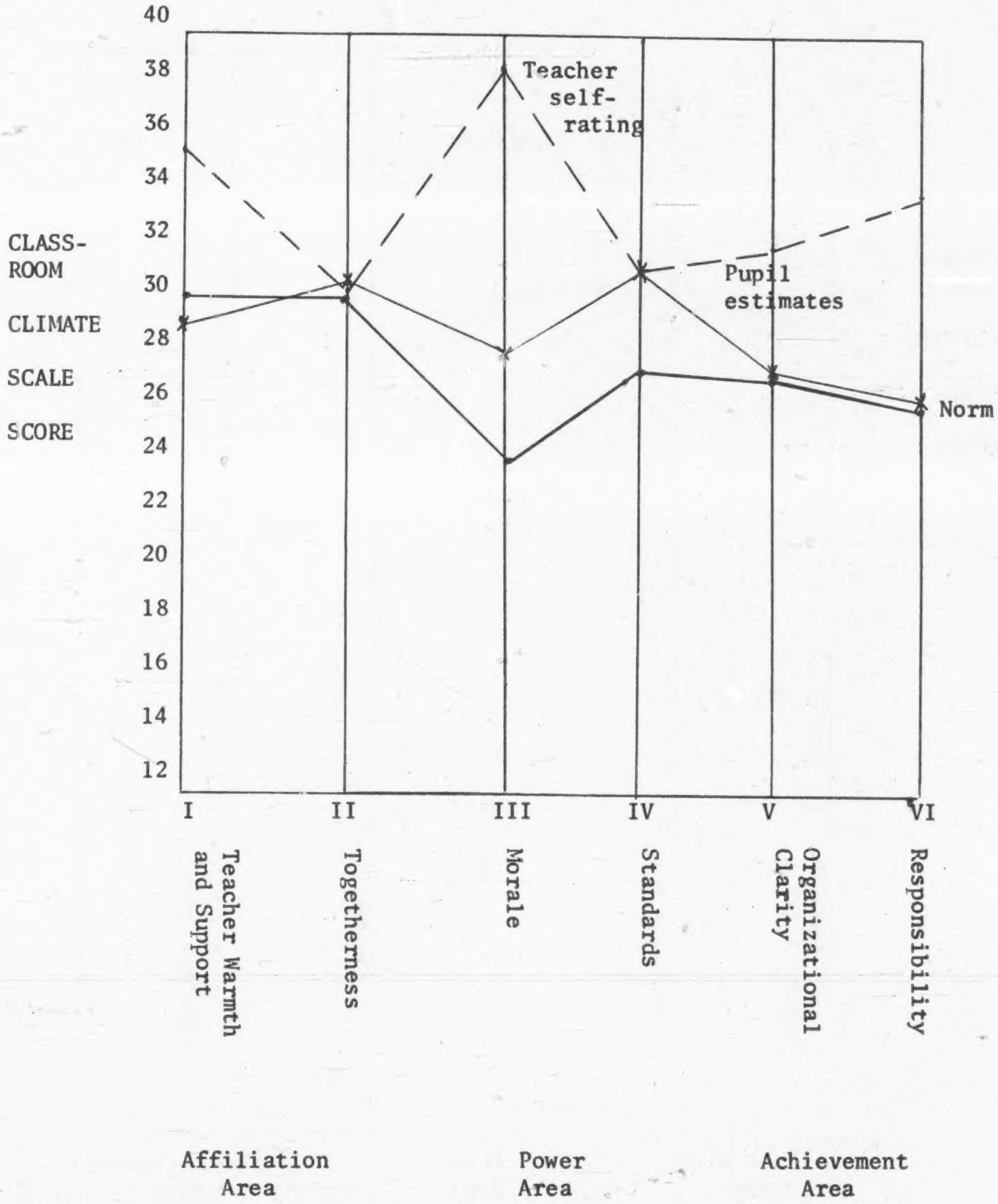
(Mr. Sambuceti)
Figure 1.

PROFILE SHEET FOR CLASSROOM CLIMATE QUESTIONNAIRE



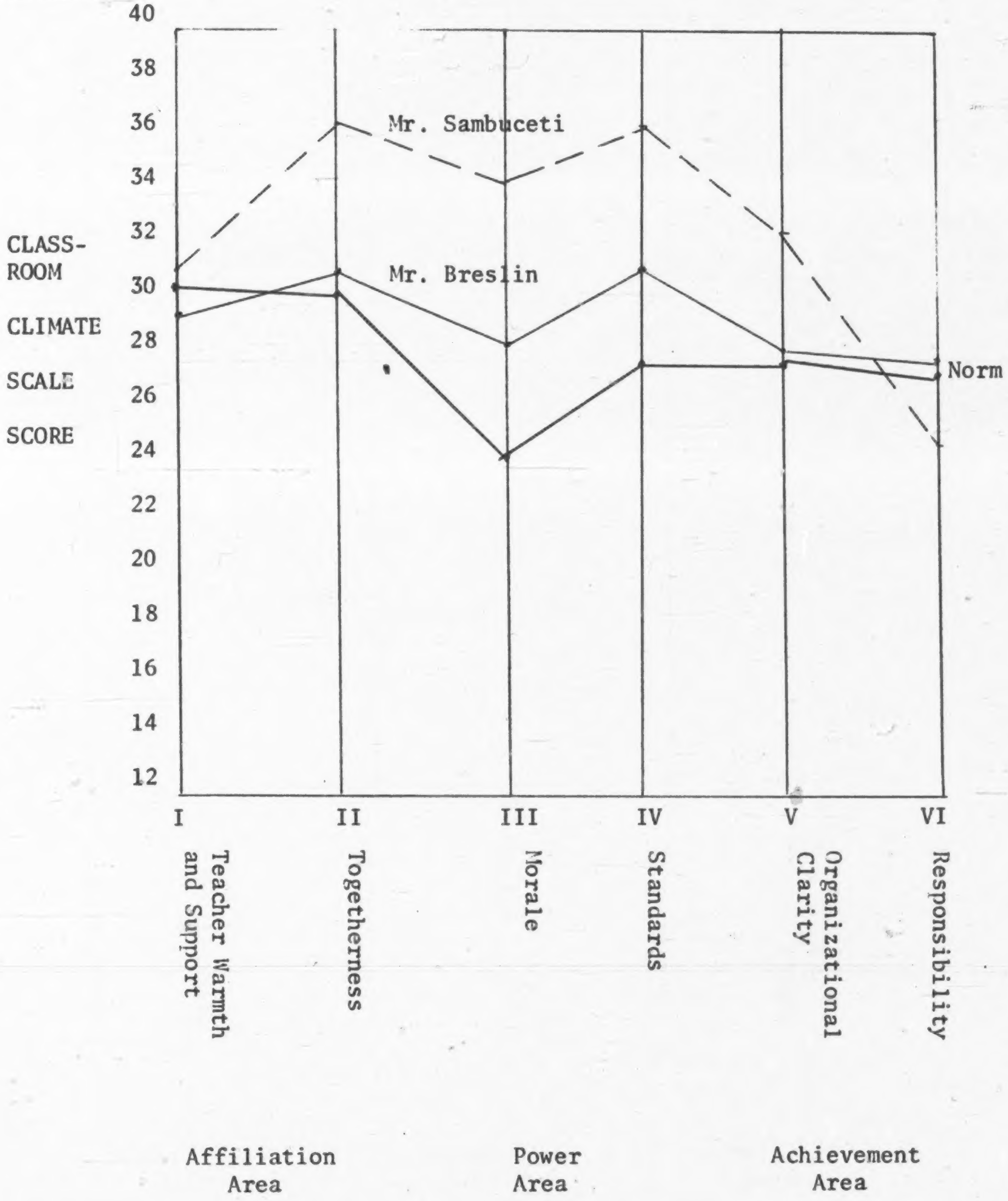
(Mrs. Diamondopolis)
Figure 2

PROFILE SHEET FOR CLASSROOM CLIMATE QUESTIONNAIRE



(Mr. Breslin)
Figure 3

PROFILE SHEET FOR CLASSROOM CLIMATE QUESTIONNAIRE



(Comparison of Mr. Breslin and Mr. Sambuceti)
Figure 4

Chapter 11

Dissemination Activities of the Achievement Motivation Development Project

Gary Bergthold and David C. McClelland

As the final year of the Achievement Motivation Development Project began, the major goals of the Project had been achieved: the curriculum and materials for training students in achievement motivation had been developed and evaluation research had proven its effectiveness. It was clear, however, that although the achievement motivation materials had been tried experimentally in a number of school systems, primarily in Quincy and Arlington, Massachusetts, very few of the schools were using the materials as an integral part of their curriculum. Even though many of the teachers who had been involved in the experimental programs had found them exciting. The school system itself seldom continued the motivation training once we stopped supporting or supplying it.

Since our overall goal was to produce motivation training materials that would find wide-spread acceptability and use in the school, the specific objective of the final year of the Project was to find ways to make the curriculum materials more useful to the classroom teacher. This report outlines the efforts that were made and suggests some conclusions regarding the integration of achievement motivation training into regular school curricula.

It was clear from previous research (see Summary Chapter) that achievement motivation training conducted by regular classroom teachers was superior in many respects to the same training done by outside consultants. Motivation training not supported by teaching style and the motivational climate of the school does not result in improved academic performance, although it may pay off in terms of out-of-school activity (Chapters 7 & 8). So it was apparent that achievement motivation training of students needs to be combined with training teachers in techniques of altering their teaching styles and classroom climates in ways that foster and reinforce the behaviors and attitudes a student acquires in achievement motivation training. Thus during the fifth year of the project, we sponsored a number of workshops for teachers on how to manage classroom climates as one way of increasing the acceptability and use of achievement motivation training in the schools.

One system chosen for the climate workshops was the Boston city schools, serving an inner-city population, many of whom might benefit from increased motivation. We knew that it would be difficult to work with this school system, but we felt that by the same token, if we could learn how to gain acceptability in a fairly traditional inner-city system, we would have contributed much to disseminating achievement motivation training. After a lengthy and sensitive period of explanation and

and negotiation, permission was received to conduct classroom climate workshops in three schools in Boston. One was a large inner-city junior high school which had changed rapidly within the past few years from a predominantly white to predominantly black student body and had a reputation of declining quality, another was a traditional high school with a predominantly Irish-American, working-class student body, and the third was a junior high school that fed into the high school, with the same kind of student population. It was necessary to interview ten or eleven school principals to set up these three workshops even though the Superintendant's Office had approved our work and we were paying for the workshops.

The three workshops were conducted for approximately twenty teachers from each school, who either applied or were recommended by their principals or department heads. The training objectives were to introduce them to a more sophisticated concept of student motivation, and to describe techniques, including changes in teaching style, classroom climate and structure, and direct motivation training of students, to encourage increased achievement and concern for excellence in students. Each of the three training programs had a duration of approximately twenty-five hours, but the scheduling of these hours was experimentally varied in order to determine the most feasible schedule for in-service teacher training. At one junior high school, the training was conducted over two weekends, beginning on Saturday morning and continuing through until mid-day on Sunday. The teachers at the junior high were trained during a school vacation on three successive days of eight hours each. The high school training was conducted in two and one-half hour sessions every day after school for two weeks. Although none of these schedules was without its problems and drawbacks, it was clear that training of this type was not feasible when conducted on the daily basis as attempted at the high school. The training program never achieved the momentum and intensity that is necessary, and was constantly interrupted by important teacher concerns such as teachers' meetings, union meetings, and personal duties. One conclusion to be drawn from this experiment is that teacher training of this kind must be done on a more intensive basis, preferably in two or three day workshops for which teachers are given time off from their regular duties.

Workshops varied somewhat depending on the style and background of the trainer, but there were common elements in all three. They began with exercises designed to provide a climate of interpersonal trust and self-analysis, using the "Who Am I?" exercise and a high school "game" developed by Richard Borofsky. This game helps participants focus on different styles of teaching and the different methods students use to play the school game. The training program then employed a variety of exercises, simulations, role plays and group discussions to familiarize the participants with three types of social motivation: the needs for Achievement, for Power, and for Affiliation. These three important types of motivation were described and demonstrated individually, and then teachers were trained to diagnose different classroom situations in terms of the interaction of these motives. By viewing and analyzing multi-media presentations of three classroom climates (see Chapter 10), teachers learned to recognize what kinds of motivation were being encouraged by different classroom climates. They began to diagnose the predominant motivational climate in their own classrooms by administering a classroom climate questionnaire to their own students, scores from which were fed back to them in the workshop for discussion and future planning. The final phase of the three workshops was a goal-setting exercise that enabled teachers to plan changes in their own teaching styles and classroom environments that would produce desired changes in student motivation, which should be reflected in changed classroom climate scores in a later administration of the questionnaire.

While the teachers reported that this new way of looking at their own motivations, their teaching styles, and the motivations of their pupils was very useful, we were unable to follow up to see whether any of their classroom climates had actually changed because of a prolonged teacher strike which disrupted school functioning until the end of the 1969-70 academic year. However, it seems unlikely to us that the workshops had any major long-term effects, not only because of the emotional upset of the strike, but also because we did not realize fully how much a teacher's style is influenced by organizational and interpersonal factors that go beyond his own particular classroom. Just as achievement motivation training for students is ineffective unless their teachers are involved, training teachers is ineffective unless they are operating in a supportive social and organizational context. It became clear to us that such factors as insufficient and outdated equipment, including desks nailed in rows, class periods that inflexibly ended 45 minutes after they began, and cliques and jealousies among teachers and administrators all contributed their share to the motivational climate students experienced. It became apparent, and subsequent experience has reinforced the notion, that a motivation program aimed at students must start with a diagnosis of the entire organizational context in which the teaching occurs. Many of the techniques that have been successful in conducting organizational development work in business and industry can be used in the schools, to focus the entire faculty and student body on school objectives and on removing the obstacles to their attainment, so that a successful innovation such as motivation training for students can be introduced in such a way that it can be tolerated by the system. Although it makes the job of introducing an innovation such as achievement motivation training much more difficult than we at first recognized, we have concluded that an effective intervention must include not only teacher training and direct training of students but also sound diagnosis and solution of organizational impediments to improving motivation in the student body. Another related lesson that we learned from this experience is that a sound program of intervention designed to introduce an educational innovation in a system which is not ready for it must include a long range relationship between the client and the school organization. It seems clear that more than a one-shot teacher workshop is needed, that a more complete consultative relationship of follow-up, evaluation, refresher training, and organizational consultation is required for such school systems.

While the experience with the Boston city school system highlighted the difficulties of introducing motivation training in some places, similar problems have been overcome in other areas, at least temporarily. DeCharms (1970) has reported how he introduced achievement motivation training on a large scale in St. Louis junior high schools, but he spent over a year running workshops for top administrators and teachers and continued to consult with the teachers while they were running the motivation courses for their pupils. Furthermore, he was working with an almost entirely black segment of the school system (including administrators and teachers) in which the desire to overcome handicaps and show improvement was strong to start with. Even here, however, he found that as soon as his research interest ceased, the teachers were asked to turn their attention to other methods because the school system had received a large grant to try out some other new methods.

We conducted another workshop for 20 teachers connected with the PACE program in California to introduce them to types of classroom climates and the use of achievement motivation training in their classrooms. The workshop was designed to interest teachers in the materials and motivate them to take the materials back to their schools and train themselves and their colleagues in their use. Although a number of these teachers reported attempts to introduce motivation training, most were frustrated by the lack of support for the ideas from their fellow teachers and school administrators. This lack of support shows itself especially in unwillingness to divert funds to purchase motivation training materials or to reschedule classes to accommodate some of the more time-consumming elements in the training itself. To some extent the problem here lies in the fact that the teachers came from 10 different school districts so that their efforts were diffuse and weak. However, a year later, at least one of the districts has scheduled motivation training in a large way. In this instance a school administrator had also been involved in a workshop.

The workshop that was undoubtedly most successful in promoting the use of achievement motivation training was one which also included school administrators. It was co-sponsored by the Program in Humanistic Education of the State University of New York at Albany and held in Rensselaerville, New York, April 12-17, 1970, for 30 teachers and administrators from the ES-70 network. Our goals were: (1) to introduce these men and women to the content and strategy of motivation training, (2) to provide sufficient training and materials so that they could and would conduct motivation training in their own school systems. It included the standard inputs plus a series of special "side trips" focused on applications, e.g., internal and external models of planning, ethical issues, structure and climate, methods and materials for motive arousal, etc.

What is most important is that approximately a year after the training, at least six of the 12 school systems represented have introduced or are planning to introduce achievement motivation training programs. Apparently introducing training at the top of the school systems (for administrators) has more long-range impact than introducing it at the bottom (for pupils).

Two consulting relationships entered into during the course of the project illustrate how a concentrated program of training, consultation, and organizational development efforts can produce very effective changes in schools. The first of these consulting relationships was with the Friends' Council on Education, an organization that provides training and other support to the Quaker schools on the East Coast. The program began with a series of three day workshops with teachers from a large number of Friends' schools, centering on issues of classroom climate and student motivation similar to those conducted in the Boston city schools. In these workshops, the teachers were familiarized with the concepts of motivation and were provided with illustrations of creative and innovative methods other teachers had used in adapting these ideas and techniques to a variety of classroom situations. Each teacher was encouraged to come up with at least one new technique or change in teaching style, to try the new technique during a six week experimental period and report the outcome during a follow-up meeting with the training group. These follow-up sessions were highly rewarding for the teachers because they learned about 10 or 12 very stimulating and practical ideas to try out which other teachers had found effective. As the number of teachers who were trained in the Friends' schools grew, the variety of adaptations of the motivation training techniques and classroom climate innovations was quite remarkable. The second major consultation effort was with the National Association of Independent Schools, and included an intensive training and consultative program with the Roxbury Latin School. This program was highlighted by a major emphasis on organizational development which helped the school to better determine its objectives, including the introduction of psychological education in the school. In both of these instances, longer term relationships helped solve many of the problems which blocked the program in the Boston schools.

One final consultative relationship showed how motivation training could be used to help solve a problem faced by many school counsellors, namely, how do you prepare high school students with poor academic records for the world of work after graduation? The project staff organized an achievement motivation course at Newton South High School for 15 students which met two or three times weekly for 6 weeks during their senior year. Several of the students were enabled to plan their last months in school better, and also what they wanted to do afterwards. The staff became convinced from this experience that motivation training could play an important role in the work study programs now sponsored in many high schools. That is, what happened in this case would be even more effective if the goal setting and planning were done in connection with work the students were already engaged in and which would ideally lead to regular employment after graduation.

In summary, workshops were conducted for over 150 teachers and school administrators during the final year of the project. They certainly succeeded in getting our research findings and motivation training approach and materials known to and tried out in a variety of school systems from New England to California. The long-range impact of these efforts cannot be known for some time, but it is at least worth noting that approximately 9 months after publication, over 3,000 copies of the teacher's manual, Teaching Achievement Motivation, by Alschuler, et. al., and over 7000 of the student workbooks have been sold through Educational Ventures, Inc., Middletown, Conn. Two multi-media film, slide and sound shows also have been produced by the project and have been widely shown, not only in the workshops, but to larger audiences. One is entitled, "What is n Ach?" (available from Intermedia Systems Corp., Cambridge, Mass.) It is a 20 minute dramatic presentation designed to introduce students, faculty, parents and others to the concept of achievement motivation, particularly as contrasted to the needs for Affiliation and for Power. The other is a 30 minute presentation which illustrates three different classroom climates as filmed and recorded on the spot, while the teacher was conducting his or her class as usual. The publications and film slide shows should continue to disseminate the ideas generated by this research project for years to come.

APPENDIX I

A BIBLIOGRAPHY ON

HUMANISTIC EDUCATION, PSYCHOLOGICAL EDUCATION, AFFECTIVE EDUCATION, THE EUPSYCHIAN NETWORK, CURRICULUM OF CONCERNS, THE HUMAN POTENTIAL MOVEMENT, PERSONOLOGICAL EDUCATION, SYNOETICS, PERSONAL LEARNING, INTRINSIC EDUCATION, CONFLUENT EDUCATION, ETC.*

Compiled by: Alfred Alschuler and Terry Borton

The variety of names under which this bibliography could be listed gives some indication of the difficulty we have had in putting limits on its contents. In order to make a usable bibliography, we have restricted ourselves to those entries which have,

1. As their goals, education to increase such poorly defined but nonetheless important qualities as sensitivity, creativity, joy, motivation,
2. As their methods, (in addition to "regular school" methods) an emphasis upon non-verbal learning, the use of fantasy, direct attention to the student's own emotions, "here-and-now" confrontation and group encounters,
3. As their basic content vehicle, the person himself.

We have not included those books which describe attempts to achieve these goals by relying on the traditional approaches of the "discipline" areas such as English or Science, nor those books which discuss methods used primarily to alleviate psychopathology.

The bibliography begins with our answer to the frequently asked question, "What are the first books I should read?" We have listed and annotated works which discuss the goals of humanistic education which give detailed examples of methods employed, and which discuss research evidence.

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* An earlier version of this bibliography appeared in the New York State Education Department's Educational Opportunities Forum, Fall, 1969.

Jones, R.M. *Fantasy and feeling in education.* N.Y.: New York University Press, 1968.

Discusses the relationship of the humanistic education emphasis on fantasy and feeling to such major curriculum innovations as the Educational Development Center's "Man--A course of study." Criticises Jerome Bruner's theory of instruction, and attempts to make distinctions between psychotherapy and education.

McClelland, D.C. and Winter, D.G. *Motivating economic achievement.* N.Y.: Free Press, 1969.

This book reports the research results of achievement motivation training for groups of businessmen in several countries. The findings constitute the best evidence to date for the efficacy of humanistic education procedures and the limitations of these approaches.

Miles, M. *Learning to work in groups.* N.Y.: Bureau of Publications, Teachers College, Columbia University, 1959.

A comprehensive "how-to-do-it" manual for planning and conducting humanistic education group meeting.

Otto, H. and Mann, J. (Eds.) *Ways of growth.* N.Y.: Grossman Publishers, Inc., 1968.

This is a collection of articles by 19 innovators who have developed specific means and methods designed to actualize human potential. It is an easily readable overview of the field.

Parnes, S.J. and Harding, H.F. *A sourcebook for creative thinking.* N.Y.: Charles Scribner and Sons, 1962.

Twenty-nine articles by researchers, theoreticians, and practitioners provide a thorough introduction to all aspects of the development of the creative processes.

Perls, F.S., Hefferline, R.F., and Goodman, P. *Gestalt therapy: Excitement and growth in the human personality.* N.Y.: Dell (paperback), 1965.

This book contains a section of exercises for the reader to do to experience and grow in ways described in the second half of the book devoted to theory. Mastery of these methods and ideas make most other current approaches into variations on its themes.

Spolin, V. *Improvisation for the theater.* Evanston, Illinois: Northwestern University Press, 1963.

Although Spolin's book grew from her work with novice actors, the ideas and procedures have been transformed for most types of groups from students in elementary school to businessmen in T-groups. Familiarity with these methods will facilitate the use of non-verbal methods, games, role-plays, psychodrama, and sociodrama.

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APPENDIX II

This section includes a copy of the Student Questionnaire Profile and the Activities Survey used in Duluth. Each questionnaire is followed by the scoring systems used to code the data and any details on test procedure not included in the section on Measures.

The organization of the material is as follows:

I. Student Questionnaire Profile

    A. Copy of the questionnaire

    B. Changes on the spring questionnaire

    C. Test Procedure for Part I - Addition Game

    D. Scoring Procedures

        1. Addition

        2. Harvard Research Questionnaire

        3. Subjective Goal Discrepancy Index

II. Activities Survey

    A. Activities Survey - Boys' Form

    B. Activities Survey - Girls' Form

    C. Scoring Procedures for the Activities Survey

        1. Activities Checklists

        2. Travel

        3. Work

        4. Saturday Scorecard

Name ______________________________ Date ______________________
LAST FIRST

Age ______________________ Sex ______________

School ______________________________ Grade in School ________

PART I A
ADDITION GAME

Instructions:

On the following page you will find 10 addition problems numbered in order of increasing difficulty. The first problem is the easiest, and the correct answer is worth 1 point. The second problem is slightly harder than the first. Therefore, the correct answer is worth 2 points. The third problem is worth 3 points, and so on, up through the tenth problem, which is worth 10 points. In otherwords, the harder the problem, the more points it is worth.

You will be given 30 seconds to do one problem only. Your task is to choose the problem that you can do to earn the most points. There are no points for wrong answers, for partial answers, or for extra answers.

You must choose what level of problem you will do now, before looking at the actual problems. Here are some sample problems and information to help you decide which problem you want to try.

SAMPLE PROBLEMS

2. (2 points)	5. (5 points)	7. (7 points)	10. (10 points)
63	55207	8605421	7352108365
50	20435	9578366	6199843247
+ 71	+ 81794	+ 6824775	+ 4995988701

The average 10th or 11th grader can do #7 in 30 seconds. (7 points)
8th or 9th grader #6 in 30 seconds. (6 points)
6th or 7th grader #5 in 30 seconds. (5 points)

Circle the number of points you think you can earn in 30 seconds.
(The number of points = the number of the problem.)

1 2 3 4 5 6 7 8 9 10

DO NOT TURN THE PAGE UNTIL THE INSTRUCTOR TELLS YOU TO BEGIN.

test 1

1. (1 point)

5
4
+ 7

2. (2 points)

42
53
+ 64

3. (3 points)

918
423
+ 710

4. (4 points)

1524
8236
+ 3059

5. (5 points)

70331
56108
+ 81864

6. (6 points)

149703
785977
+ 897629

7. (7 points)

4582576
1516514
+ 6256978

8. (8 points)

44498642
53989497
+ 91548157

9. (9 points)

784960827
687092851
+ 268568793

10. (10 points)

7336827205
7652075879
+ 6953894686

Which problem did you do? _____

Did you finish the problem in 30 seconds? _____

Was the answer correct? ____

How many points did you earn? ____

The next test contains 10 similar problems and the same 30 second time limit. Which problem will you try to do this time? _____

DO NOT TURN THE PAGE UNTIL THE INSTRUCTOR TELLS YOU TO BEGIN.

test 2

1. (1 point)

3
7
+ 8

2. (2 points)

53
26
+ 70

3. (3 points)

734
923
+ 524

4. (4 points)

2495
8118
+ 6347

5. (5 points)

70375
62776
+ 84636

6. (6 points)

138725
609694
+ 787544

7. (7 points)

3821932
2734639
+ 8765432

8. (8 points)

54493153
62395732
+ 69737566

9. (9 points)

253924331
614984756
+ 958196274

10. (10 points)

5039606327
9473589877
+ 6727938596

Which problem did you do? ____

Did you finish the problem in 30 seconds? ____

Was the answer correct? ____

How many points did you earn? ____

The next test contains 10 similar problems and the same 30 second time limit. Which problem will you try to do this time? ____

DO NOT TURN THE PAGE UNTIL THE INSTRUCTOR TELLS YOU TO BEGIN.

test 3

1. (1 point)

6
2
+ 9

2. (2 points)

31
75
+ 63

3. (3 points)

746
902
+ 815

4. (4 points)

7417
5168
+ 8155

5. (5 points)

20598
63882
+ 92407

6. (6 points)

294692
189569
+ 782136

7. (7 points)

7406942
8471632
+ 5435168

8. (8 points)

96343869
37537677
+ 48767366

9. (9 points)

762453664
959347389
+ 883826957

10. (10 points)

9896245349
6063846883
+ 5618487977

Which problem did you do? ______________
Did you finish the problem in 30 seconds? ________
Was the answer correct? ________
How many points did you earn? ________
What is your total number of points for the three tests? ________

PART II

HARVARD RESEARCH QUESTIONNAIRE

The following pages contain statements of opinion. Each statement is followed by this sequence: + - 1 2 3. If you agree with the statement, circle the + sign. If you disagree, circle the - sign.

Then, indicate how much you agree or disagree by circling 1 for slightly, 2 for moderately, or 3 for strongly.

For example:

I enjoy work as much as play. + - 1 2 3

If you agree moderately with that statement, you would circle + to indicate agreement, and 2 to indicate medium, or moderate agreement.

If you disagree strongly with the statement, you would circle - to indicate disagreement, and 3 to indicate strong disagreement.

If you have any questions, please ask them now. Work quickly, and you will have ample time to complete Parts II and III.

	AGREE	DISAGREE	SLIGHTLY	MODERATELY	STRONGLY
1. I enjoy work as much as play.	+	-	1	2	3
2. The marks I get in class are entirely my own responsibility.	+	-	1	2	3
3. Nervousness while taking an exam or test hinders me from doing well.	+	-	1	2	3
4. I almost always give suggestions when my friends are trying to decide what to do.	+	-	1	2	3
5. I nearly always strive hard for personal achievement.	+	-	1	2	3
6. It is largely luck that we have stayed out of World War III as long as we have.	+	-	1	2	3
7. Everytime I try to get ahead, something or someone stops me.	+	-	1	2	3
8. I feel capable of handling myself in most social situations.	+	-	1	2	3
9. In a course where I have been doing poorly, my fear of a bad grade cuts down my efficiency.	+	-	1	2	3
10. I practically never do any more school work than what my teacher assigns.	+	-	1	2	3
11. If I play my cards right, I can get most people to like me.	+	-	1	2	3
12. I feel that my future peace and self respect depend upon my accomplishing some notable piece of work.	+	-	1	2	3
13. When I am poorly prepared for an exam or test, I get upset, and do less well than even my restricted knowledge should allow.	+	-	1	2	3
14. If I don't understand an assignment, I don't do it.	+	-	1	2	3

	AGREE	DISAGREE	SLIGHTLY	MODERATELY	STRONGLY
15. Getting good grades seems to be largely a matter of taking the right course at the right time.	+	–	1	2	3
16. I seldom have fears that my actions will cause my friends to have a low opinion of me.	+	–	1	2	3
17. I set difficult goals for myself which I attempt to reach.	+	–	1	2	3
18. People like me don't have much of a chance to be successful in life.	+	–	1	2	3
19. Through discussion I can convince others.	+	–	1	2	3
20. The more important the examination, the less well I seem to do.	+	–	1	2	3
21. I always volunteer answers in class without being called on.	+	–	1	2	3
22. I enjoy relaxation wholehartedly only when it follows the successful completion of a substantial piece of work.	+	–	1	2	3
23. Life is largely a gamble.	+	–	1	2	3
24. It doesn't bother me to have to enter a room where other people have already gathered and are talking.	+	–	1	2	3
25. I'm a leader in my group of friends.	+	–	1	2	3
26. I work like a slave at everything I undertake until I am satisfied with the results.	+	–	1	2	3
27. One should carry on an active discussion of politics in the hopes of obtaining a better world.	+	–	1	2	3
28. During exams or tests, I block on questions to which I know the answers, even though I remember them as soon as the exam is over.	+	–	1	2	3

		AGREE	DISAGREE	SLIGHTLY	MODERATELY	STRONGLY
29.	If I don't agree with my friends' opinions I keep it to myself.	+	-	1	2	3
30.	When a man is no longer anxious to do better then, well, he is done for.	+	-	1	2	3
31.	Making friends is largely a matter of being lucky enough to meet the right people.	+	-	1	2	3
32.	In group discussions I usually feel that my opinions are inferior to those of others in the group.	+	-	1	2	3
33.	The only time I help out at home is when I'm told to.	+	-	1	2	3
34.	I find that my mind goes blank at the beginning of an exam, and it takes me a few minutes before I can function.	+	-	1	2	3
35.	Success almost always turns out to be the result of perserverance and ability.	+	-	1	2	3
36.	I feel that nothing else which life can offer is a substitute for great achievement.	+	-	1	2	3
37.	I'd rather watch T.V. than try to think of something new to do.	+	-	1	2	3
38.	I'm so tired from worrying about an exam, that I find I almost don't care how well I do by the time I start the test	+	-	1	2	3
39.	I feel that I have little influence over the way other people behave.	+	-	1	2	3
40.	Good luck is more important than hard work for success.	+	-	1	2	3
41.	I don't make a very favorable first impression on people.	+	-	1	2	3
42.	My parents never have to tell me to do my homework.	+	-	1	2	3

	AGREE	DISAGREE	SLIGHTLY	MODERATELY	STRONGLY
43. Time pressure on an exam causes me to do worse than the rest of the group under similar conditions.	+	-	1	2	3
44. People are responsible for their actions, both good and bad.	+	-	1	2	3
45. I find myself reading exam questions without understanding them, and I must go back over them so that they will make sense.	+	-	1	2	3
46. If my friends are doing something I don't want to do, or don't approve of, I would try to persuade them not to do it.	+	-	1	2	3
47. Only ambition will bring a man's mind into full activity.	+	-	1	2	3
48. Some people seem born to fail while others seem born to succeed, no matter what they do.	+	-	1	2	3
49. When confronted with a group of strangers my first reaction is always one of shyness and inferiority.	+	-	1	2	3
50. It's useless to try to find a summer job around here because there is too much competition.	+	-	1	2	3
51. When I don't do well on difficult items at the beginning of an exam, it tends to upset me so that I block on even easy questions later on.	+	-	1	2	3

PART III

BOYS

The following pages contain a list of different jobs. For each job, estimate how many of the boys in your class have enough general ability to get such a job someday if they wanted it. Show your estimate by placing an X in the appropriate column to the right of the list.

For example:

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
astronaut					
waiter					

If you think only the top few members of the class could become an astronaut, you would mark X in the first column. If you think practically every boy in the class could become a waiter, you would mark the column to the far right.

IF YOU HAVE ANY QUESTIONS, PLEASE ASK THEM NOW.

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
astronaut					
lawyer					
auto mechanic					
college professor					
policeman					
politician					
advertising executive					
private in the army					
actor					
insurance salesman					
computer operator					
pro football player					
psychologist					
high school teacher					
social worker					
truck driver					
coach					
doctor					
coal miner					
writer					
chef					
officer in the army					
bartender					
bricklayer					
taxi driver					

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
translator					
dept. store manager					
musician					
business executive					
newspaper reporter					
dept. store salesman					
carpenter					
hairdresser					
waiter					
leader of a band					
architect					
gas station attendent					
minister					
construction worker					
fashion designer					
electrician					
dock worker					
grade school teacher					
street sweeper					
veterinarian					
restaurant manager					

1. What % of your classmates have less general ability than you do? ______________________________

2. Which job listed above is most like the job you want to have? ______________________________

PART III

GIRLS

The following pages contain a list of different jobs. For each job, estimate how many of the girls in your class have enough general ability to get such a job someday if they wanted it. Show your estimate by placing an X in the appropriate column to the right of the list.

For example:

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
veterinarian					
sales girl					

If you think only the top few girls of your class could become a veterinarian, you would mark X in the first column. If you think practically every girl in your class could become a sales girl, you would mark the column to the far right.

IF YOU HAVE ANY QUESTIONS, PLEASE ASK THEM NOW.

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
lawyer					
artist					
librarian					
nurse					
airline stewardess					
secretary					
hotel maid					
receptionist					
scientist					
florist					
social worker					
factory worker					
writer					
grade school teacher					
dietician					
waitress					
telephone operator					
veterinarian					
actress					
sales girl					
fashion designer					
speech therapist					
kitchen help					
dental hygienist					
small shop owner					

	the top few	the top 1/4	the top 1/2	the top 3/4	nearly the whole class
dept. store buyer					
architect					
medical technician					
household help					
seamstress					
model					
religious vocation					
cafeteria worker					
file clerk					
go go girl					
restaurant manager					
housewife					
doctor					
physical therapist					
interpreter					
college professor					
movie ticket seller					
elevator operator					
hairdresser					
business executive					

1. What % of your classmates have less general ability than you do?______________________________

2. Which job listed above is most like the job you want to have? ______________________________

B. CHANGES IN THE SPRING STUDENT QUESTIONNAIRE PROFILE

In the spring version on the Student Questionnaire Profile, three changes were made in the Addition Game: 1) 12 problems were offered on each round of the game instead of 10. The 11th problem had 11 columns of figures, the 12th, 12 columns; 2) A fourth round was added identical in format to rounds 1, 2 and 3; and 3) A new set of math problems was given. The new problems were matched with the former set on the number of columns of figures and on the number of columns on which students were required to carry. Parts II and III of the Student Questionnaire Profile were identical to the fall test.

C. TEST PROCEDURE FOR PART I - ADDITION GAME

The test instructions on page 1 of the Addition Game were read aloud. Students were then given approximately five minutes to read over the instructions to themselves and to decide which problems they would attempt on the first round of the game. After being given 30 seconds to complete the first problem, they were then asked to answer only questions 1 and 2 in the lower right hand corner of the test and then to make a bid for the next round. No answers for the problems were given because it was feared that some students might change their answers. They were told, however, that the problems would be corrected at a later date.

D. SCORING PROCEDURES

1) The Addition Game

The Addition Game was scored for risk-taking behavior in two parts; round 1 (test 1) was scored for initial level of risk; and rounds two, three, etc., were scored for use of feedback. The background for the scoring system stems from the finding that people with high achievement motivation tend to take moderate risks (those with about a 50=50 probability of success) while individuals with low achievement motivation tend to take either very low or very high risks (called chicken errors and dare errors, respectively.)

Initial Level of Risk: Three scoring categories were used: Moderate risk, chicken error, and dare error. Since students were told that the average 7th grader could do problem 5 within the time allowed, we used a conservative definition of moderate risk to cover all initial bids from 4 to 7. Those bids of 3 or less were categorized chicken errors, and those of 8 or more, dare errors.

Initial level of risk was scored differently for the spring test because it appeared that students remembered their general level of performance on the fall test. We first scored for initial level of risk using the above criteria. Then we re-scored the first round defining a moderate risk as ± 2 the highest problem solved on the fall test, a chicken error as three or more under the highest problem achieved, and a dare error as three or more above the highest problem achieved. Since there were many fewer errors using the second scoring system, we felt it was legitimate to assume that students had remembered their former performance. Thus, the second scoring system was considered a more valid measure of risk taking for the spring test.

Use of Feedback: The remaining rounds of the Addition Game were scored for use of feedback. Each round (score and bid) can be scored only once. If a round fell into two of the categories listed below, it was scored in the category which appears closest to the top of the list. If any rounds were blank, use of feedback was not scored for that individual.

I. If a success occurred on the previous trial at n--that is, a subject completed the problem bid in the time allowed--the subject has the following options and limitations.

   A. Under no conditions may n attempt n-1.

   B. N+1 must be attempted after two successes at n, whether or not the 2 successes are in a row.

   C. After a success at n, and a drop to n-1 (a IA error), n or n+1 must be attempted. This rule also applies to cases in which a subject is successful at n, then drops low and gradually progresses in succeeding rounds. If he stays at an n lower than his initial success, IC should be scored.

   D. After just one success at n, the subject had the option of trying n or n+1.

   E. Jumps of more than one, n to n+2, should not be tried unless it is trial two--first scorable round for "use of feedback". (Consider n to be the highest number at which the subject had been successful).

II. If a failure occurred on the previous trial at n--that is, a subject failed to complete the problem bid in the time allowed--the subject has the following options and limitations:

   A. Under no condition can n+1 be tried.

   B. Usually n-1 should be tried. However, if he has only missed once, he may attempt n again. (If the majority of his trials at n have been successful, he should stay at n rather than moving to n-1).

   C. Negative jumps of more than one, n to n-2, should not be made when a success has occurred at a number closer to n, at n, or at a number above n. Otherwise they are acceptable.

Resultant measures:

Wrong direction errors: Sum of IA and IIA errors

Chicken errors: Sum of IA, IB, IC, and IIC errors

Dare errors: Sum of IE, IIA, and IIB errors

Total Feedback Errors: Sum of chicken and dare errors. (All wrong direction errors are automatically counted since they fall into one of these two categories).

Each feedback round was scored 0 if no error occurred, or a letter according to the type of error present. Scores were then summed for the number of specific errors listed above. Someone using a moderate risk strategy should have no errors, whereas those using a high or low risk strategy, will have three feedback errors. The final measures used in this research were 1) Initial Bid Errors, 2) Total Feedback Errors, and 3) Total Errors (sum of 1 and 2).

2) Harvard Research Questionnaire

The scoring key for the 51 statements in this questionnaire is given below with the question loading (positive or negative).

1	V-Ach
2	IE+
3	DA
4	OP+
5	V-Ach
6	IE-
7	COE
8	SE+
9	DA
10	OP-
11	IE+
12	V-Ach
13	DA
14	OP-
15	IE-
16	SE+
17	V-Ach
18	COE
19	IE+
20	DA
21	OP+
22	V-Ach
23	IE-
24	SE+
25	OP+
26	V-Ach
27	IE+
28	DA
29	OP-
30	V-Ach
31	IE-
32	SE-
33	OP-
34	DA
35	IE+
36	V-Ach
37	OP-
38	DA
39	IE-
40	COE
41	SE-
42	OP+
43	DA
44	IE+
45	DA
46	OP+
47	V-Ach
48	IE-
49	SE-
50	OP-
51	DA

V-Ach: Value of Achievement. A positive score on this scale indicates positive value placed on achievement.

IE: Internal vs. External Control of Reinforcement. A positive score indicates internal control of reinforcement.

DA: Debilitating Test Anxiety. A positive score indicates the presence of debilitating test anxiety.

OP: Origin-Pawn (Or Internal vs. External Stimulus of Behavior). A positive score indicates an origin (or internal) orientation.

SE: Self-Esteem. A positive score indicates positive self-esteem.

COE: Control of Environment. A positive score indicates a lack of control over one's environment.

Only agreement (+) or disagreement (-) were scored. Since several students left the second set of columns (1, 2, and 3) blank, it was decided to ignore the degree of agreement or disagreement in order to retain a larger number of cases for analysis.

Responses were scored as follows: agree (+1), disagree (-1), and either blank or both agree and disagree (0). Scores were then reversed for negatively loaded questions so that all scores making up a scale were in the same direction. Blanks were scored 0 under the assumption that such a response indicated ambivalence on the part of the subject. If, for any scale, more than 20% of the items were left blank, the scale was considered unscorable.

3) Subjective Goal Discrepancy Index

Subjective Goal Discrepancy is the difference between the subject's estimate of his own ability and his estimate of the ability required for his vocational goal. The subject's estimate of his own ability was taken from question 1 at the end of the vocational checklist, "What % of your classmates have less general ability than you do?" The percentage or fraction given by the student was reversed to make it consistent with the second part of the measure (below). The revised figure was the segment from the top in which the student considered himself; i.e., top 10%, top 25%, etc. If a subject answered "some" or "most", the answer was considered unscorable.

To determine the subject's estimate of the ability required for his vocational goal, we took the occupation given in answer to the question, "Which job listed above is the most like the job you want to have?" We then recorded the proportion of people in his class who he felt had enough general ability to do that job. In those cases where two occupations were listed, data was recorded for the first occupation listed. If the occupation given was not on the checklist, the answer was considered unscorable. Two exceptions were made: professional baseball player was considered comparable to professional football player, and private in the navy was considered comparable to private in the army. In recording proportions, "top few" was scored as 5% and "nearly the whole class" as 95%.

Subjective Goal Discrepancy was then determined by subtracting the student's estimate of the ability required for this vocational goal from his estimate of his own ability. A negative score indicated that the subject saw his vocational goal as requiring less ability than he estimated he had (i.e., a low risk), and a positive score, that the vocational goal required more ability than he estimated he had (i.e., a high risk). The median of the distribution of discrepancy scores, (regardless of sign) was used to divide the students into two groups, high and low discrepant. Achievement oriented risk-taking ability should be reflected in low discrepant choices.

PART II

A. ACTIVITIES SURVEY

(Boys' Form)

Name ______________________________ Date ______________
Last First

School ______________________________

Birthdate ______________________________

On the following pages you will find questions about how you spend your free time. Please tell us only about the things you do on your own time (either after school or outside of school).

Most of the questions can be answered by filling in the blanks with numbers. A few require short written answers.

AMDP - Harvard Graduate School of Education. Cambridge, Mass., March, 1968.

SPORTS AND GAMES

Pick out each sport or game that you play at least once every two weeks while it is in season. Write in the blank how many times every two weeks you play it. (Do not include gym classes.)

Example: 5 Baseball - means that during the summer I play baseball 5 times every 2 weeks.

_____ Baseball
_____ Football
_____ Basketball
_____ Soccer
_____ Hockey
_____ Volleyball
_____ Tennis
_____ Handball
_____ Boxing
_____ Wrestling
_____ Ping Pong
_____ Playing Pool
_____ Badminton

_____ Gymnastics
_____ Track
_____ Golf
_____ Hunting
_____ Bowling
_____ Archery
_____ Skiing
_____ Ice Skating
_____ Roller Skating
_____ Fishing
_____ Swimming
_____ Scuba Diving
_____ Lifting Weights

_____ Boating
_____ Horseback Riding
_____ Chess
_____ Checkers
_____ Dominoes
_____ Bridge

Other sports and games not listed above. Please be specific:

_____ ____________
_____ ____________
_____ ____________
_____ ____________

Now look at the activities you have marked above.

1. Do you usually do any of these activities alone? ____ yes ; ____ no

2. Put a star (*) in front of those activities you usually do alone.

HOBBIES

Pick out each hobby you have worked at in the past 2 weeks. Write in the blank how many times you have worked at it in the past 2 weeks. (Tell us only about activities either after school or outside of school.)

Example: 5 Building models - means I worked at building models 5 times in the past 2 weeks.

_____ Working on cars or motorcycles

_____ Working on bikes or go-carts

_____ Repairing electric motors

_____ Working on TV's, radios or hi-fi's

_____ Building model train sets

_____ Building models

_____ Building toys

_____ Carpentry

_____ Metal shop work

_____ Photography

_____ Playing a musical instrument

_____ Practicing to be a singer

_____ Folk dancing

_____ Writing music

_____ Writing letters

_____ Writing stories

_____ Writing poetry

_____ Reading books

_____ Acting in plays

_____ Sculpturing

_____ Drawing

_____ Painting

_____ Collections (shells, stamps, coins, etc.)

_____ Breeding or training animals

_____ Growing crops

_____ Chemistry experiments

_____ Physics experiments

_____ Biology experiments

_____ Math problems & puzzles

Other hobbies not listed above. Be specific:

_____ _________________________

_____ _________________________

_____ _________________________

Now look at the activities you have marked above.

1. Do you usually do any of these activities alone? _____ yes; _____ no

2. Put a star (*) in front of those activities you usually do alone.

GROUP ACTIVITIES

Pick out each activity that you have done with your friends during the past 2 weeks. Write in the blank how many times you have done it in the past 2 weeks.

Example: __9__ Visiting friends - means I have visited friends 9 times in the past 2 weeks.

_____ Visiting friends

_____ Playing cards with friends

_____ Going to movies with friends

_____ Going into town with friends

_____ Riding around with friends

_____ Talking on phone

_____ Taking out girls

_____ Going to parties

_____ Dancing

_____ Church activities

_____ Boys clubs

_____ Boy Scouts

_____ Buying clothes

_____ YMCA

_____ Watching TV with friends

Other group activities not listed above. Be specific:

_____ ____________________

_____ ____________________

TRAVEL

What is the farthest away from home you have been in the past two weeks?

Where did you go?

About how many miles away was it?

Whom did you go with?

How did you travel? (car? bus? bike? etc.)

How long did you stay?

WORK .

1. Did you have a job last summer? ______ yes ______ no

a) What did you do?

b) Whom did you work for?

c) How did you find out about the job? (check one)

______ I looked around for possible jobs

______ I didn't have to look around--someone told me about the job

d) How did you finally get the job? (check one)

______ I applied for the job

______ Someone gave me the job--I didn't have to apply

e) How many weeks did you work?

f) How much, on the average, did you earn each week?

2. Do you have a job right now? ______ yes ______ no

a) If so, what do you do?

b) Whom do you work for?

c) How did you find out about the job? (check one)

_____ I looked around for possible jobs

_____ I didn't have to look around--someone told me about the job

d) How did you finally get the job? (check one)

_____ I applied for the job

_____ Someone gave me the job--I didn't have to apply

e) How many weeks have you had the job?

f) How much, on the average, do you earn each week now?

3. Have you had any other jobs since September? _____ yes _____ no

a) If so, what did you do?

b) Whom did you work for?

c) How did you find out about the job? (check one)

_____ I looked around for possible jobs

_____ I didn't have to look around--someone told me about the job

d) How did you finally get the job? (check one)

_____ I applied for the job

_____ Someone gave me the job--I didn't have to apply

e) How many weeks did you work?

f) How much, on the average, did you earn each week?

SATURDAY SCORECARD

We would like to know what you did last Saturday (or what you did the Saturday before if you were sick last Saturday). For each hour of the day, please write in the blank where you were, what you were doing and whom you were doing it with (e.g., brother, sister, parents, school friends, etc.)

5 A.M. ______________________________

____

6 A.M. ______________________________

____

7 A.M. ______________________________

____

8 A.M. ______________________________

____

9 A.M. ______________________________

____

10 A.M. ______________________________

____

11 A.M. ______________________________

____

NOON ______________________________

____

1 P.M. ____

____

2 P.M. ____

____

3 P.M. ____

____

4 P.M. ____

____

5 P.M. ____

____

6 P.M. ____

____

7 P.M. ____

____

8 P.M. ____

____

9 P.M. ____

____

10 P.M. ____

____

11 P.M. ____

____

MIDNIGHT ____

____

1 A.M. ____

____

2 A.M. ____

____

3 A.M. ____

____

4 A.M. ____

____

Thank you for completing the survey.

B. ACTIVITIES SURVEY

(Girls' Form)

Name ______________________________________ Date ________________
Last First

School ____

Birthdate ____

On the following pages you will find questions about how you spend your free time. Please tell us only about the things you do on your own time (either after school or outside of school).

Most of the questions can be answered by filling in the blanks with numbers. A few require short written answers.

AMDP - Harvard Graduate School of Education. Cambridge, Massachusetts, March, 1968.

SPORTS AND GAMES

Pick out each sport or game that you play at least once every two weeks while it is in season. Write in the blank how many times every two weeks you play it. (Do not include gym classes.)

Example: __5__ Baseball - means that during the summer I play baseball 5 times every 2 weeks.

_____ Baseball
_____ Basketball
_____ Soccer
_____ Field hockey
_____ Volleyball
_____ Tennis
_____ Ping pong
_____ Playing pool
_____ Badminton
_____ Gymnastics

_____ Track
_____ Golf
_____ Bowling
_____ Archery
_____ Skiing
_____ Ice skating
_____ Roller skating
_____ Fishing
_____ Swimming
_____ Scuba diving

_____ Boating
_____ Horseback riding
_____ Chess
_____ Checkers
_____ Dominoes
_____ Bridge
_____ Cheerleading
_____ Majorettes

Other sports and games not listed above. Be specific:

_____ ___________
_____ ___________

Now look at the activities you have marked above.

1. Do you usually do any of these activities alone? ____ yes; ____ no
2. Put a star (*) in front of those activities you usually do alone.

HOBBIES

Pick out each hobby you have worked at in the past 2 weeks. Write in the blank how many times you have worked at it in the past 2 weeks. (Tell us only about activities either after school or outside of school.)

Example: __5__ Cooking - means I cooked 5 times in the past 2 weeks.

_____ Cooking

_____ Sewing

_____ Clothes designing

_____ Interior decorating

_____ Furniture making

_____ Ceramics

_____ Jewelry-making

_____ Leather work

_____ Building toys

_____ Sculpturing

_____ Drawing

_____ Painting

_____ Practicing to be a singer

_____ Playing a musical instrument

_____ Writing music

_____ Writing letters

_____ Writing stories

_____ Writing poetry

_____ Reading books

_____ Acting in plays

_____ Photography

_____ Folk dancing

_____ Ballet or modern dancing

_____ Breeding or training animals

_____ Growing crops

_____ Chemistry Experiments

_____ Physics Experiments

_____ Biology Experiments

_____ Math problems and puzzles

_____ Collections (shells, stamps, coins, etc.)

Other hobbies not listed above. Be specific:

_____ ______________________________

_____ ______________________________

Now look at the activities you have marked above.

1. Do you usually do any of these activities alone? ____ yes ; ____ no

2. Put a star (*) in front of those activities you usually do alone.

GROUP ACTIVITIES

Pick out each activity that you have done with your friends during the past 2 weeks. Write in the blank how many times you have done it in the past 2 weeks.

Example: __9__ Visiting friends - means I have visited friends 9 times in the past 2 weeks.

_____ Visiting friends
_____ Playing cards with friends
_____ Going to movies with friends
_____ Going into town with friends
_____ Riding around with friends
_____ Talking on phone
_____ Going out with boys
_____ Going to parties
_____ Dancing
_____ Church activities

_____ Girls clubs
_____ Girl Scouts
_____ Buying clothes
_____ YWCA
_____ Watching TV with Friends

Other group activities not listed above. Be specific:

_____ ____________________
_____ ____________________
_____ ____________________

(All remaining sections of the girls' form were identical to the boys' form.)

C. SCORING PROCEDURES FOR THE ACTIVITIES SURVEY

1) Activities Checklists

On each of the activities checklists (sports and games, hobbies, and group activities) we counted: 1) the number of activities checked, 2) the number of activities done 3-7 times in two weeks, and 3) the number of activities done 8 or more times in two weeks. Cutting points at 3 and 8 were determined by looking for natural breaks in the distribution of frequency of participation in activities for a sample of the students tested. In addition, the number of activities done alone was recorded for sports and games and for hobbies.

In scoring the group activities checklist, four categories were excluded: church activities, clubs, scouts and YMCA or YWCA. Unlike the other activities on the checklist, these four are organizational in character and most likely call for some elements of achievement or power motivation from participants. Since this list was to provide a measure of affiliative activities, we decided to limit our analysis to those categories which were relatively unambiguous.

Note on the Sports and Games Checklist: Research done by Kulakow (McClelland, 1961) found that those cultures higher in n Ach tended to play more competitive, individualistic games. On this basis we planned to group sports and games on the checklist into the following four categories: group competitive, individual competitive, group non-competitive, and individual non-competitive; and then study the differences in participation in each type of activity. However, in attempting to group sports and games, we found the distinction between competitive and non-competitive difficult to work with. Many activities, such as swimming, gymnastics, skiing, etc., might easily fall under either classification. For these reasons, the results from the Sports and Games Checklist were not analyzed for this study. Further revisions in this part of the survey appear to be in order.

2) Travel

Inclusion of questions on travel stemmed from McClelland's findings that those primitive cultures with higher n Ach in folk tales travel significantly more and that those modern cultures with higher n Ach show a greater interest in air travel and show a greater number of emigrants per capita during times of stress (McClelland, 1961). From these findings we felt that individuals with higher achievement orientation would be more apt to travel and to travel farther. Upon re-examination, the questions used on the activities survey did not provide a good measure either of the extent of travel or of an exploratory orientation. The questions all referred to the longest trip taken within the last two weeks, rather than getting at the frequency or extent of travel during this time. Further, since responses were limited to the longest trip (often taken by the student with his family) we were not able to get an idea of the extent to which students took trips on their own initiative. For these reasons, the results on this section were not analyzed.

3) Work

For each of the three sections on work (summer job, present job, and other jobs since September) we scored for 1) whether or not the individual had a job, and 2) initiative in getting the job. All jobs listed were scored except those that involved working for family without pay. It was felt that such jobs involved compliance with family demands, rather than choice in the use of leisure time, and therefore were inappropriate for this measure.

The index of initiative in getting a job combined scores from the following two questions:

1. How did you find out about the job?

    a. I looked around for possible jobs. (Score 1)

    b. I didn't have to look around--someone told me about the job. (Score 0)

2. How did you finally get the job?

    a. I applied for the job. (Score 1)

    b. Someone gave me the job--I didn't have to apply. (Score 0)

The Scores from these two questions were added together to yield an index with a range of scores from 2 (high initiative) to 0 (low initiative).

4) Saturday Scorecard

In coding the Saturday Scorecard, we distinguished four types of activities: 1) Purposeful activities are defined as activities instrumental in attaining achievement or skill-oriented goals; 2) Pastime activities are oriented toward relaxation, entertainment or affiliative goals; 3) Neutral activities are routine activities related to personal upkeep or family chores; and 4) Unknown or unscorable activities included those which were insufficiently described to be placed into one of the first three categories. For two of the above, purposeful and pastime activities, further distinctions were made according to whether the activity was done alone or with others.

Activities were grouped under category headings as follows:

Purposeful Hours

a. doing a salaried work
b. working on a hobby
c. organizing or running an activity
d. doing homework
e. participating in sports (YMCA, YWCA, Scouts, clubs were included here)
f. taking a trip
g. shopping alone
h. travelling towards a destination if the subject is involved in a purposeful activity once at destination.

Pastime Hours

a. attending sports events (as spectator)
b. going to movies
c. going to parties
d. "goofing" or riding around
e. shopping with others (other than parents)
f. listening to radio, records, or T.V.
g. travelling towards a destination if the subject is involved in a pastime activity once at destination.

Neutral Hours

a. eating
b. getting dressed or getting ready to go out
c. doing required chores around the house

Unknown or Unscorable Hours

If not enough information to score in categories above.

Each of the 24 hours on the Saturday Scorecard which was not spent in sleep was assigned to one of the eight categories: purposeful-alone, purposeful-with others, purposeful-no information whom with, pastime-alone, pastime-with others, pastime-no information whom with, neutral and unscorable. Cases in which more than one activity was listed for the hours were coded according to the category appropriate for the majority of activities listed. In some cases, we relied on the flow of activities to guide us in coding mixed hours. Scoring was done by the writer, with consultation on difficult or ambiguous hours with another coder.

In addition to a score for (number of hours spent in the activity) each of the categories listed above, four additional measures were recorded: 1) the hour the student got up on Saturday, 2) the number of hours the student was up (not sleeping), 3) the number of operant hours (number of hours up minus the number of neutral hours), and 4) the number of scorable operant hours (number of operant hours minus the number of unscorable hours). Operant hours are defined as those in which the student has a choice concerning his activities.

In the analysis of the data, purposeful and pastime hours were converted into proportions based on the number of scorable operant hours. This was done to restrict our comparisons to those hours in which we assumed students had a choice concerning their activities, and in which we had confidence in the appropriate categorization of the activity.

APPENDIX III

What is the best classroom climate?

David C. McClelland

There is no one method of teaching a class which is best for all teachers, all subject matters, and all types of students. Teachers have to find an approach that is best for them in a particular class. But most of them would be glad to have help in finding that approach. The classroom climate questionnaire aims to provide that help. It is a teaching aid that gives a teacher feedback on how his class is perceived by his pupils along dimensions that are related to student motivation. This information helps him decide what changes to make if he wants to change the motivational climate of his classroom.

Making a change will depend on three things:

1) self-knowledge, what the teacher feels he can do most easily, naturally, and successfully

2) knowledge of particular techniques or approaches that promote increases or decreases on classroom climate dimensions

3) knowledge of how scores on those classroom climate dimensions are related to motivation and learning of pupils in the class

A teacher may confront a situation like the following: Suppose my class reports that they do not feel a strong sense of personal responsibility for their own work. That is, the class scores low on the responsibility dimension of classroom climate. Should I attempt to increase the sense of personal responsibility? Would the students like it better? Would they learn more? If I wanted to change, how could I go about doing it? What techniques for change could best fit the kind of person I am?

Obviously, we cannot answer all such questions here. Many of the answers can only be found by increasing self-knowledge and by experimenting with your particular classroom.

However, we can report how various climate dimensions in general affect pupil motivation, which in turn affects their performance. Let us begin with achievement motivation since most is known about how classroom climates affect it.

What climates foster achievement motivation? The two dimensions of primary importance for promoting achievement motivation are:

- responsibility
- organizational clarity which fosters accountability

Of considerable importance also is morale, the sense of belonging to a worthwhile enterprise which is going well. For achievement motivation to be developed or encouraged, the student must be able to set his own goals (which are neither too high nor too low for him,) get concrete feedback on how well he is doing (clarity), and live in an atmosphere in which standards of improvement are constantly stressed. Performance improvement as a standard should not be confused with letter perfect execution of tasks set by others. This type of standard belongs more in the disciplinary area and has to do with power motivation. Our research on the climate questionnaire has shown that most junior high school students do not distinguish between standards of performance and standards of discipline. For this reason, the "standards" scale of the questionnaire includes both factors. It might be interesting to imagine the kind of classroom where performance and discipline standards were distinguishable and what effects this might have on students. Unfortunately, in the schools where this research was conducted, no such classrooms were found.

When to encourage and not to encourage achievement motivation. Teachers are most apt to want to increase achievement motivation when pupils just don't seem to want to learn. They appear apathetic, disinterested, "unmotivated." Shifting from standard classroom format to one in which students can set their own goals often works well with such students. The teacher can use, for example, some kind of a contract system like the one employed by Mr. Breslin in his Spanish class. Or, teachers might wish to provide direct training in achievement motivation to their students. Lots of classroom materials and exercises are available for teachers who want to encourage achievement motivation. Training materials developed by the Harvard Achievement Motivation Development Project are available at Educational Ventures, Inc., Middletown, Connecticut.

But do not expect all students (or parents!) to like a shift toward an achievement-oriented climate. Some do and some don't. Here are two typical reactions by high school seniors to a contract system which they had experienced in junior high school:

> Alex: I learned that you're not always going to get a push. With a push, I can work on my own. Sometimes, I need a push. I learned a lot. My mother didn't like it--I wasn't engaged to the fullest, went home early, wandered in and out. Needed a push in the seventh grade. So I didn't do anything. Then I realized it was fun to do things yourself. I liked the idea of choice of courses, better than having them given to you, though kids didn't always choose wisely.

(Would Alex have developed the interest and capacity to set his own goals if he had always gotten the push he and his mother thought he needed?)

Louis: I really enjoyed it, more stimulating than ordinary marking system. We had contracts, no grades, but teacher evaluation at the end of time periods. Marking gives more pressure but stimulation takes its place in a better way--learn to use time correctly with long-term assignments. You learn to make decisions. You chose anything you wanted to learn and made a contract to find out how much you could do.

(Louis was obviously sold on what he called self-learning and would not have liked a class which was all lecturing and studying the text. But was he missing something?)

The problem in introducing goal setting and achievement motivation training is to do it for those whom it would benefit without upsetting too much the students and their parents who keep thinking all they need is to be pushed harder. Sometimes classes have had to be divided according to which system the students want, but in general achievement motivation techniques have increased over-all performance, particularly of apathetic students for whom ordinary methods don't seem to work.

Achievement motivation training is obviously not needed much in schools where children are already strongly oriented toward achievement at home and have high personal standards of excellence. For such children, a classroom climate stressing cooperation and friendliness may be more useful.

What climates foster power motivation? The two climate dimensions of primary importance for power motivation are:

- standards (mostly of discipline)
- morale

Power motivation involves the desire to impress others either in a personal ("egoistic") way or in a socialized ("altruistic") way. Thus stress on good order ("discipline") can increase the concern for socialized power, for doing things for and on behalf of others or the group. But the measure of whether the teacher's stress on punctuality, quiet and respect is succeeding lies in the student morale score. If he has to rely too much on disciplinary techniques, the chances are he has not succeeded in getting the children to believe in the group objectives and accept the importance of good order. Criticism and punishment increase a more egoistic type of power drive--a selfish desire to strike back in response to criticism. This lowers morale.

When to encourage and not to encourage power motivation. Obviously if a class is "out of hand," or chaotic, little learning can take place and the teacher must be concerned with developing a desire in the students to act to support the group and believe in its good order and importance. This is the positive meaning of morale as opposed to the negative meaning of discipline in which a teacher gets into a personal power struggle with a child in an attempt to threaten him into being orderly. Discipline supported entirely by fear and unsupported by respect for good order and authority seldom works very well, as experienced teachers know. Rather, students can be encouraged to believe in the educational objectives of their group and to maintain discipline in order to achieve them.

On the other hand, too much emphasis on discipline, criticism, and order can destroy the child's desire to achieve or learn on his own. He waits to be told what to do, and does it (or not), solely to impress (or not impress) the teacher. Power relationships can take over a classroom very easily and produce the apathetic student teachers complain about so often. Such students get wholly absorbed in obeying (or disobeying) and fail to get involved in the learning process altogether. Many teachers may not realize that even over-conforming students, who do everything they are told, also may not be involved in the learning process. They, too, may not be motivated to learn but only to obey, and when the "push" is gone, they may simply stop learning. Thus, it might be hard for a teacher to know whether the better performance which results from arousing socialized power drives is temporary or not. With experience, as he follows the careers of his former students, he may learn to tell the difference between the obedient, conforming student and the achievement motivated learner.

What climates foster affiliation motivation? The two dimensions of primary importance are:

- teacher warmth and support
- togetherness

They encourage the development of a spirit of friendship and enjoyment in the class. Children like the teacher because he likes them and doesn't play favorites, pick on some children, or criticize everybody all the time. He may get the children to work together in groups at times, so that their natural desires to help eachother can be encouraged rather than criticized, as in classes where they are set against each other or warned not to "cheat" by helping each other.

When to encourage and not to encourage affiliation motivation: Good feeling generally promotes more effective learning. It needs to be encouraged when children are bored, overly competitive, jealous, "cliqueish," or disagreeable. They may "catch" low morale from the teacher if he feels discouraged, underpaid, tired, or ineffective. His morale is important to their morale. He should know this and act accordingly to improve his morale by any appropriate means.

Affiliation motivation doesn't need encouragement if a class is in danger of degenerating into a party in which a good time was had by all, but nobody was learning anything. Like power motivation, affiliation concerns can take over a classroom and, for example, allow warmth to substitute entirely for standards of performance for student responsibility. If a teacher allows almost any behaviors in order to maintain the friendship of students, little learning is likely to take place.

These general remarks are no substitute for a detailed specific analysis of yourself in a particular classroom. They are only meant to touch on some of the more obvious ways in which climate can affect motivation and performance and some of the more obvious situations in which one type of corrective action or another would seem indicated.

Classroom Climate Survey

The purpose of this survey is to help us understand how you feel about this class. This is not a "test." You are asked to give your honest, frank opinions about the class which you are now attending. Please do not give answers about other classes or other teachers you might have. Do not write your name on the survey.

In answering each question, go through the following steps:

1. Read the statement carefully.
2. Think about how well the statement describes the class you are now it.
3. Circle the choice to the right of the statement which most accurately describes your feeling about that statement.

For example:

- If you strongly agree with the statement, circle STRONGLY AGREE.
- If you agree with the statement, circle AGREE.
- If you disagree with the statement, circle DISAGREE.
- If you strongly disagree with the statement, circle STRONGLY DISAGREE.

You will have as much time as you need to complete the survey. Please respond to every statement.

1.	I feel that the teacher likes us.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
2.	The students in this class rarely get out of hand or disobey.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
3.	The teacher doesn't like us to read ahead or study something different from what is assigned.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
4.	You really have to know your work in order to do well in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
5.	I get graded fairly in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
6.	I often feel confused in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
7.	I'm proud to belong to this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
8.	We like to talk to the teacher outside of this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
9.	Our teacher insists we hand in our homework on time.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
10.	We often get a chance to decide what we want to do in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
11.	I find it hard to tell whether or not I'm doing well in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
12.	The teacher always calls on those who have the right answer in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE

13.	When I have finished my work, I know what to do next.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
14.	I feel like an outsider in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
15.	The teacher makes you feel dumb if you ask for help in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
16.	There's a lot of cheating in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
17.	The best way to get a good grade in this class is to give answers that are from the book.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
18.	Students in this class would work hard even if the teacher left the room.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
19.	I'm afraid to make a mistake or give a wrong answer in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
20.	Sometimes I feel this class is falling apart.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
21.	I like to tell other people I am in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
22.	In this class the teacher doesn't help us much.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
23.	The teacher always insists that we be well behaved and polite.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE

24.	The teacher is really interested when students in this class come up with ideas of their own.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
25.	The teacher in this class always encourages me to do my best.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
26.	Students in this class usually know how well they're doing.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
27.	We know where we're going in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
28.	It is hard to be friends with some of the other students in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
29.	The teacher in this class really cares about all of us.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
30.	The teacher doesn't pay much attention, even if we are too noisy.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
31.	We all work at our own speeds in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
32.	No matter how hard I work, I can't seem to improve in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
33.	I think the teacher knows when I'm trying hard.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
34.	Our teacher goes too fast and the students get confused.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY [illegible]

35.	I get along with almost everyone in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
36.	The teacher likes some students much more than others in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
37.	There are few rules in this class that you have to obey.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
38.	In this class we spend most of the time listening to the teacher explain things.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
39.	This class is easy enough so that no one has to work very hard.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
40.	Someone is always doing something wrong in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
41.	I usually understand what the teacher is trying to do in this class.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE
42.	In this class we don't really work together much.	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE